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CONTRIBUTIONS OF PURE SCIENCE TO PROGRESSIVE MEDICINE *

WILLIAM J. MAYO, M.D.

ROCHESTER, MINN.

Archeologists in search of evidence of the development of the sciences have earnestly studied the meager historical records of Egypt's ten thousand years, and, while relics of interest in the general arts and sciences have been found, comparatively little of value from the standpoint of medicine has been unearthed, perhaps because of the eight complete reversions to barbarism which buried the seats of Egyptian culture in the sands of time.

It was not until the fourth century before the Christian era that the ancient Greeks, largely through the contributions of two men, gave evidence of a love for medical science. We look back to Hippocrates as the founder of clinical medicine. He was one of the first to free himself from the shackles of superstition. Observing carefully the manifestations of disease, in the light of the knowledge extant, he critically traced, so far as he was able, various disease processes from origin to termination. To the genius of Hippocrates' near contemporary, the great Aristotle, we owe the development of the deductive method of reasoning, on which science has rested securely. Aristotle was interested in all living things, in the method of growth, in the life processes and in the manner in which life terminated. The Aristotelian methods were to endure for two thousand years unchallenged by a competitor.

While versatile Galen (131-201 A. D.), through experimental physiology, made splendid contributions to medicine, it was not until the seventeenth century, the late Shakespearean period, that inductive methods of reasoning were emphasized by Bacon, and extended in the nineteenth century by the logic of Mill. In the seventeenth century these newer methods were applied to medicine by William Harvey, the founder of modern physiology. We think of Harvey in relation to the circulation of the blood, but we should think of him rather as the founder of experimentation and research, as the builder of methods by which controlled experimentation, often vivisection, could be made to parallel clinical experience.

Sydenham, of precious memory, was the clinician of Harvey's time, and what Hippocrates was to Aristotle, Sydenham was to Harvey. Sydenham, with a clear mind and a hatred for sham and hypocrisy in medicine, gave us the finest insight of all time into clinical medicine as related to current knowledge. While we look on him as the founder of sound theories of the causation and classification of fevers, this investigation was merely one expression, and that almost incidental, of his clinical acumen, which led to many advances in medical science.

The seventeenth century produced another man about whom we have heard too little, John Mayow, who was one of the first of the physician chemists. The observations and experiments of Mayow led later to the discovery of oxygen, and today, after nearly three hundred years, we are just beginning to understand those fundamental problems which connect physicochemistry with the medical sciences. The impetus given by the work of Harvey, Sydenham and Mayow led to rapid advance in knowledge of the sciences in relation to clinical medicine.

Of those who carried on these researches, the outstanding names were John and William Hunter, who, in the latter part of the eighteenth century, did so much to put medicine on a sound foundation. John Hunter had that divine discontent which leads to progress. He was the first to study pathology as a whole, and it was he who related general pathology to clinical medicine. Previous to Hunter's time, great truths were discovered in pathology and medicine, but they were largely isolated and uncorrelated. John Hunter, with the eye of the master, saw in these variations of vital processes the fundamental similarity due to common origin. When one goes to the Hunterian Museum at the Royal College of Surgeons of England and looks at those wonderful specimens, 14,000, prepared and labeled in black by Hunter's own hands, so beautifully preserved that even after more than a hundred years they compare favorably with the best we are able to prepare today, one can readily understand the profound influence that Hunter exerted on modern medicine, of which he sometimes has been called the father. Hunter was interested in animal experimentation. It is told of him that after attending a meeting at which Jenner had propounded his theory of vaccination for smallpox, Hunter the next morning wrote Jenner a letter saying, "Why submit hypotheses? Try it on a hedgehog and know."

William Hunter, the physiologist, approached the normal functions of life with a remarkable understanding, and correlated them by the inductive method.

Advance in clinical medicine since the time of the Hunters has been rapid. Workers in pure science, engaged in fundamental research, have given the clue to the solution of many problems in clinical medicine. Recently there was celebrated the centenary of the birth of the chemist physician Pasteur, whose epochal studies have been of greater service to mankind than those of any other known human being. Pasteur drew from the foundations of pure science inspiration which led to the discovery of new knowledge, on which was to develop the germ theory of disease. To the characteristic

* Presidential address, read before the Congress of American Physicians and Surgeons, Washington, D. C., May 5, 1925.

patience and thoroughness of the German school we owe the extraordinary development of the relation of Pasteur's discoveries to the microbic origin of disease, Virchow's studies in cellular pathology, and Schmiedeberg's development of pharmacology, contributions of the greatest importance to the science of medicine.

Even a brief retrospect shows the lasting influence of Greek culture, the dominance in the middle and later historical periods of the English scientific school, the great contributions of the French, and last, the development of Teutonic methods. The torch has been handed to America to light the way. Europe is exhausted by strife, disrupted by racial hatreds; the ills of today cloud the horizon of the continental tomorrow.

The sciences bring into play the imagination, the building of images in which the reality of the past is blended with ideals for the future, and from the picture there springs the prescience of genius. The influence of the eye has been dominant in the development of science. Units in science are ultimately measured by visual methods. In the development of the special cranial senses in man, those of taste, smell and hearing do not influence cerebral activity as directly as in other animals; but around the sense of sight were built most of the higher cerebral functions.

AIDS TO VISION

The great progress of science in the last generation has come largely through mechanical aids to vision, which have permitted the concentration on scientific problems of the full power of human intelligence. In the time of Harvey, microscopes were mere magnifying glasses, and those of the Hunterian school were not much better. The French, largely because of their development of better types of microscopes in the nineteenth century, became prominent in scientific research. One may well say that the Zeiss Optical Works of Jena, aiding the eye in the investigation of the minute, responding to the demand of science, contributed greatly to the progress of the Germans. The microscope, the roentgen ray, the exploratory incision, all have been subservient to the eye in the building of modern scientific medicine, the foundation stones quarried from the postmortem, the edifice built from the "pathology of the living," as so aptly stated by Moynihan.

Sometimes, however, the microscope has failed, not because the object of study has been ultramicroscopic, but rather from lack of characteristics sufficiently distinctive for its detection. Many of the protozoa and bacteria have protective coloring which prevented their detection until the introduction of vital stains brought to the aid of the microscope distinctive coloring, and permitted the recognition with marvelous accuracy, of micro-organisms, such as the bacillus of tuberculosis and the spirochete. The cultivation of bacteria in suitable mediums has made easy their precise study. Cultural adaptability and selective localization of the bacteria of the streptococcus group have played an important part in the work of Rosenow, who has clarified the study of focal and concealed infections.

The whole fabric of the great advances in biologic science in the last generation was woven with microscopy, but the microscopic limit of 0.1 micron, or $\frac{1}{250,000}$ inch, has been reached. The eye, aided by the microscope, was able to reveal not only the objects themselves, but usually also their size, shape, color and other distinctive characteristics. All the particulate substances studied were obedient to well understood laws; for instance, gravity. Today we face the ultramicroscopic field in relation to scientific progress, as our forebears faced the realm of science when Pasteur promulgated his theories. Again it is the eye that carries us forward.

COLLOID CHEMISTRY

When Brown, the English botanist, working in Bristol, began the observations which culminated in his written communication of 1827, he focused attention on a subject of enormous importance. The questions he raised a century ago require all the resources of modern science for an answer. Brown noted, as man undoubtedly had noted from time immemorial, that when a pencil of bright light was thrown into a dark room, there were to be seen in the air certain rapidly moving particles of which there was no other physical evidence. On experimentation, he noted with the microscope the continual movement among minute particles suspended in a liquid. Because of his investigations, the peculiar vibratory motions of these particles were called Brownian movements. The most important contribution to a proper understanding of these phenomena was that of Thomas Graham, master of the mint in London, who, in 1861, published his painstaking observations, which led to the first detailed description of colloid bodies. Graham's work was largely based on dialyses of colloid-sized substances through parchment paper. These observations led to the investigation of the colloid field, which included those ultramicroscopic particles lying between 0.1 and 0.001 micron, or $\frac{1}{250,000}$ and $\frac{1}{25,000,000}$ inch.

It was demonstrated ultimately that colloids formed suspensions, not true solutions; that colloids were of sufficient size to reflect rays of light, so that the particles might be studied. With the ultramicroscope, shadows of minute particles 0.01 micron, or $\frac{1}{2,500,000}$ inch, in diameter can be seen. The great percentage of colloid particles, however, are infinitesimal, beyond discovery by the ultramicroscope, detectable only by the diffraction of light in suspensions, or coloring in the mass, as by dyes. A ray of light will pass through a true solution without diffraction, while it will be diffracted by even the finest of colloid suspensions. The disclosures of the colloid field have supplied the knowledge lacking with regard to substances that lie between those things which can be seen with the eye aided by the microscope, and the molecule and the atom, physical knowledge of which depends on other scientific evidence. Tyndall also called attention to these curious phenomena occurring in the track of a luminous beam (called the Tyndall phenomenon), the colorings of which are the result of sunlight striking colloids in the air. The rainbow is due to refraction of light by colloids. The colloid field is now being actively investigated, and has yielded extraordinary results in agriculture and the industries.

Water may exist in a molecular form, and as a vapor it does not respond so readily to the attraction of gravity. Under specific atmospheric conditions, however, as when the evaporated water rises to a height where the air is rarefied, and where greater coldness exists than at the point of evaporation, it gathers together in colloid form as clouds. For rainfall of an inch to an acre, a hundred tons of colloid water, practically unresponsive to the force of gravity, is suspended over each acre; when the change from a dispersed to a condensed state has taken place, gravity causes the water to fall as rain, while the electrical energy on the surface of the colloidal particles may be given off as lightning and thunder.

The agricultural physicochemist Gortner and his pupils may influence the feeding of the world by their discoveries of the importance to plants of water in a bound form. The difficulties that stood in the way of finding food plants that would withstand winter killing were enormous. Years of patient waiting were often necessary before weather conditions suitable for the demonstrations could be encountered. When Gortner investigated the possibility that water might exist in a bound state uninfluenced by ordinary atmospheric or thermic conditions, he found that if plants that did not winter kill were compressed in a hydraulic press, little or no juice, or free water, was obtained, and that the amount of juice that could be expressed was directly proportional to the ability of the plant to withstand frost. Carrying out his experiments in the desert, in conditions of drought, he found that plants which could withstand dryness contained water, but in a bound form. Experiments in the properties of water under compression, one of the most incompressible of all substances, have shown that the water in a film on colloid surfaces occupies only 75 per cent. of its former volume, and that under such conditions it behaves as a solid and does not evaporate at 300 C. in a complete vacuum.

From colloid chemistry there is now being built a new physiology of man, a better understanding of vital phenomena and their relation to the metabolic processes, internal secretions, and immunizing substances.

PHYSICOCHEMISTRY

The most extraordinary knowledge has come from the pure science of physicochemistry. Sir William Bayliss has well said that the dividing line between physics and chemistry has disappeared; that only under certain physical conditions, colloidal or molecular, can there take place the electric exchange of electrons and protons in the atomic field. A remarkable fact is that colloids, atoms, molecules and electrons, unlike particulate substances which are microscopically visible, remain in rapid motion more or less permanently suspended in their medium in spite of the force of gravity, although all are affected by pressure, temperature and atmospheric conditions. In the years from 1803 to 1807, Dalton promulgated the atomic theory and investigated the constitution of the molecule, with so few instruments of precision that the exactness of his results bordered on the miraculous.

Moseley, the brilliant young English physicist, who lost his life in the Gallipoli campaign at the early age of 28, was able to show by an analysis of the atom through roentgen-ray diffraction that there were ninety-two possible elements between hydrogen, the lightest, and uranium, the heaviest, all but four of which are now known, and that between each two elements in the progression of atomic weight there was approximately the weight of one or more atoms of hydrogen. The atom of hydrogen is made up of one electron in rapid motion around the single proton which forms the nucleus. An atom of carbon has twelve protons and twelve electrons; an atom of oxygen, sixteen protons and sixteen electrons; an atom of gold, 196 of each, and an atom of mercury, 200 of each. The accuracy of these conclusions has been somewhat spectacularly confirmed by Miethe, who was able to convert the atom of mercury into one of gold. Economically the experiment was a failure, since it would have cost $30,000 to produce one dollar's worth of gold; but scientifically it was epochal, since it showed that the alchemist's dreams of the transmutability of metals were not idle. The electromagnetic vibration of the roentgen ray is approximately from $\frac{1}{100,000,000}$ to $\frac{1}{1,000,000,000}$ inch in length, smaller than the atom itself, a fact that has made possible the refractive process by which these measurements were made.

Bohr, the Danish investigator, following Rutherford's nuclear theory, pictures the atomic system as a solar system in which the sun is represented by a nucleus of positive electricity and the planets by rapidly revolving negative electrons, and on this theory he has calculated the wave length of light in each line of the hydrogen spectrum. Rutherford, Thomson, Ashton, and many other research workers have demonstrated that about the nuclei are electrons, free or loosely attached, which have been given the name of valence electrons, and it is the study of the exchange of these arrangements that we speak of as chemistry.

As shown by Arrhenius, the Swedish investigator, true solutions of electrolytes in water under certain conditions are ionic, and it is the separation into positive and negative ions that makes chemical exchanges possible. Since life depends on chemical changes, it is not surprising that 75 per cent. of the human body should be composed of water and complex aqueous systems.

Oxygen contributes on the average 47 per cent. of the atmosphere, water and the known earth. Considering that the base of the brain can live only from seven to ten minutes without oxygen, it is surprising that there is in the body no mechanism for storing a reserve of oxygen or producing it under stress. All life is the result of combustion. Oxidation, or the union of various elements with oxygen, gives rise to the heat and energy necessary for life processes. This can also be expressed in terms of electrical charges. All foods contain carbon, hydrogen and oxygen. The carbohydrates include the sugars, the coal of the body, which commonly furnishes heat and energy. The excess fuel is stored as fat, which again is composed of carbon, hydrogen and oxygen in different combinations.

A study of the fats explains the ability of the camel to go with little water or food for long periods, and how life is maintained in hibernating animals. While the sugars undergo rapid metamorphosis, the hydrogen in the fats is not so rapidly dissociated from carbon, and the result of its oxidation is the slow production of heat, energy and, notably, water, all of which are so necessary to life. The amino-acids resulting from protein metabolism are readily convertible into sugar. All proteins contain nitrogen, and most of them a little sulphur, elements that give form and stability to the tissues and facilitate the deposition of other elements, such as calcium.

It is in the tissue colloids that molecular dissociation of hydrogen permits the combination of carbon and oxygen, which gives rise to energy and heat. The resultant carbon dioxid passes into the venous capillaries and to the lung for elimination. When certain toxic poisons, for instance, histamin, paralyze the contractile cells in the capillary wall, the colloids of the blood plasma pass from the capillaries into the tissues, and produce the condition known as shock.

Perkin, working in the Royal College of England in 1856, discovered the dyes in which he was unable to interest England. His student Hofmann took this new knowledge back with him to Germany, under whose control it gave rise to many useful drugs as well as to explosives.

Colorimetry has been of extraordinary value in aiding the eye to recognize the minute. Certain manifestations

of electromagnetic vibration are recognized by the retina as colors. The longest ray appears to the retina as red, and in order of the length of the rays, orange, yellow, green, blue and violet are seen. On the relative length of these rays, the colorimetric system is based. The production of colors *en masse* has facilitated the application of the dyes to the scientific study of the ultramicroscopic field. Evans has shown that the elimination of dyes from the blood stream, when introduced intravenously, is purely a filtration phenomenon.

The results of the application of the pure science of physicochemistry to clinical medicine have opened up a wonderful field. Today, restoration of the sick can be as precisely accomplished in the living body as similar chemical exchanges can be brought about in the test tube. The estimation of retained excretory substances is now accurately made from studies of the blood, whereas formerly they were inaccurately estimated from the excretions, as, for instance, the urine. The whole problem of excretory or filtration organs, such as the kidney, has been greatly simplified.

The kidney is to be looked on as a filter of molecular substances. Urea is one of the smallest of the molecules, and does not hydrate; that is, it does not absorb water, and therefore does not change in size. The dye phenolsulphonephthalein, used by Rowntree and Geraghty, apparently of the same filtrability as urea, has made possible a ready test of urea filtration through the kidney. Rowntree also used the dye phenoltetrachlorphthalein, which he found was excreted entirely through the bile as a test of the functional capacity of the liver. Rosenthal's splendid contribution, whereby the extent of retention of dye in the blood is determined in hepatic disease, has proved of great practical value in clinical medicine. This test furnishes a fairly accurate conception of hepatic function.

Mann, in classic experiments, showed that after removal of the liver from the dog, no urea was formed in the body, and that sugar disappeared from the blood, but also that life in the dehepatized animal could be greatly prolonged by the intravenous introduction of glucose-salt solutions. The extraordinary remedial effect of this and similar measures, on toxemias of various kinds, gives a prevision of the future of medicine. We think of certain pathologic conditions as causing death, but death is brought about by altered function, and a true toxemia, for example uremia, affects the body as a whole. In those little understood toxic conditions associated with so-called high intestinal obstruction, mechanical obstruction is not necessarily present. These syndromes have been given various names, such as acute dilatation of the stomach and gastromesenteric ileus, and are similar to the toxemias seen at times following surgical operations and in the course of continued fevers.

When acute, these toxemias of high intestinal obstruction are accompanied by so profound a depression of vitality as sometimes to merit being called shock. The patients become dehydrated from excessive vomiting, the result of reverse intestinal peristalsis, and are either unable to take nourishment or unable to metabolize what they do take. The blood pressure goes down, subnormal temperature is associated with clammy perspiration, and sudden death often follows. The source of the disturbance lies in altered secretions of the duodenum and the high jejunum. In these cases the urea, which normally does not exceed 26 mg. for each 100 c.c. of blood, will usually be above 100, as much as from 200 to 300 mg. or more. The urea represents the nitrogenous waste product of protein metabolism. Creatinin, with a normal of 2 mg. in each 100 c.c. of blood, represents endogenous metabolism or tissue catabolism. When the creatinin blood content rises above 10 mg. it indicates a serious condition. The chlorids, with a normal of from 560 to 650 mg. for each 100 c.c. of blood, are greatly reduced; the reduction is frequently accompanied by alkalosis, and signifies a profound change in metabolism. The carbon dioxid combining power of the blood plasma goes up from its normal, between 56 and 65 per cent. by volume, and when above 100, tetany often ensues, which is another expression of alkalosis. Dehydration is a most marked characteristic, and indicates a concentration of the blood, leading to a failure of elimination and a profound alteration in the chemical constitution of the body.

Normally, complex carbohydrates are not available as such, but are decomposed into simple sugars before they are metabolized. Glucose is the specific form into which carbohydrates are converted before they can be utilized by the body. By intravenous introduction of glucose, sodium chlorid and the great solvent, water, we are able temporarily to sustain life. The introduction of a liter of 1 per cent. chlorid solution with 10 per cent. glucose two or three times in twenty-four hours will often restore vitality in these patients and enable a life-saving operation to be safely undertaken.

The reaction of the blood is slightly alkaline and essentially stable. The slight increase in alkalinity which we speak of as alkalosis has its counterpart in an equally slight decrease which, for want of a better name, is called acidosis, in which the combining power of the carbon dioxid of the blood plasma usually goes down from the normal 56 to 65 per cent. by volume to perhaps as low as 10 per cent. by volume. The condition that may accompany diabetes is due to improperly metabolized higher fatty acids. The sugar necessary for the metabolism of these acids is exhausted or not available in certain conditions before they are metabolized to a safe low level.

We have long known that diabetic patients must have a proper amount of carbohydrates both before and after operation to furnish the sugar necessary to prevent acidosis and coma. Insulin is also of great value in the prevention and control of acidosis. By medical measures, dietary control and insulin, Wilder has reduced our surgical mortality in the diabetic cases practically to that in the nondiabetic.

Recently Thalhimer, and Fisher, Mensing and Snell have successfully applied these principles to the treatment of acidosis of nondiabetic patients both preoperatively and postoperatively, especially as a remedy for certain kinds of shock. Ten per cent. glucose solution given intravenously, not faster than a liter in an hour, or continuously, as advised by Matas, with insulin subcutaneously, has proved extraordinarily efficient.

In other words, the great majority of patients seriously ill can be rehabilitated before operation or aided in weathering the storms of readjustment following operation.

Physicochemistry of the human body concerns life itself. A proper understanding of these vital processes is necessary to every man who practices medicine, no matter what his specialty may be; and as for the surgeon, the newer knowledge is changing his outlook. By calling to his aid the scientist, the internist and the various specialists, he is able to bring relief to a large

number of patients who formerly were looked on as beyond help, or who, unprepared for operation, were subjected to a high risk. Rehabilitation is to be a master word in medicine.

ROENTGEN-RAY THERAPY OF THROMBO-ANGIITIS OBLITERANS

PRELIMINARY REPORT *

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Our object in this paper is to report the results of roentgen-ray therapy in a series of fifty cases of circulatory disturbances of the extremities, most of which were thrombo-angiitis obliterans. Great possibilities of beneficent results were anticipated about four years ago, when an investigation was carried out, at which time the radiation was directed over the gangrenous or pulseless parts. Small repeated stimulating doses were given, but with no encouraging results. In fact, the lack of any favorable response to any degree, and the fear of producing additional obliterative changes in the blood vessels, as well as the possibility of additional radiation dangers, led to an early discontinuance of the investigation.

Our interest in the roentgen-ray therapeutics of thrombo-angiitis obliterans was renewed about two years ago by the incidental observation of improvement of vascular disturbance of this type, in the lower extremities of a patient referred to one of us by Dr. Barnet Joseph of New York, for irradiation of an hypertrophied prostate. After the patient was discharged with involution of the prostate gland, Dr. Joseph reported a pronounced and definite improvement in his vascular disturbance.

Although the investigation prompted by this discovery was not productive of any results, nevertheless a few comments are warranted on this phase of the subject. Our natural conclusion at this time was that the effect was due to either stimulation or inhibition of internal secretions of the prostate or testis, as the disease is confined almost exclusively to males. We therefore irradiated the prostates and testes of four patients, but without sufficiently encouraging results to continue. It is significant that the original prostate patient was irradiated with the so-called high voltage machine using 200,000 volts, whereas the others were limited to 100,000 volt irradiation. The scattered secondary irradiation in the former apparently accomplished the results lacking in the latter.

During the year 1923, the roentgen-ray and poliomyelitis departments of the Hospital for Joint Diseases were investigating the value of roentgen-ray therapy in the treatment of poliomyelitis.[1] The remarkable relief of marked hyperesthesias and the improvement in trophic and circulatory disturbances of long duration produced by irradiation of involved spinal segments was so striking as to encourage renewing the investigation of circulatory disturbances of the extremities, with spinal and paravertebral roentgen-ray stimulation. This was carried out systematically and consistently in a few severe cases, with such promising results as to warrant investigation on a larger scale.

The roentgen-ray technic used in the beginning of the investigation has remained the same throughout the entire series. The doses are essentially stimulating ones and consist of from ten to fifteen minutes' exposure, alternating at weekly intervals over the midanterior and posterior aspects of the body, from the tenth dorsal to the fifth lumbar vertebra in lower extremity affections, and over the cervical and upper two dorsal segments in upper extremity disturbances. The following factors were used: 5 milliamperes, 100,000 volts, 5 mm. aluminum filter, 15 inch distance. An infrequent sequel of irradiation, encountered in only a few cases, was a transitory nausea, which quickly subsided. The results in stimulative roentgen-ray therapy are attributable to increased activity of metabolic processes, particularly phagocytosis, and to biochemical changes, similar to those produced in the establishment of immunity.[2] Loeb,[3] after investigating the effects of radiation on living cells and tissues, concluded that "weak intensities of the rays may stimulate motility, excitability of nerves and metabolism; greater intensities weaken and destroy them." Stimulative roentgen-ray therapy is now on a very firm and established basis, and with a constantly enlarging sphere of application. It is not our object here to trace the development and progress of this field of therapeutics; but references to salient contributions in this field of endeavor may be included.[4]

Our hospital service is singular in that it has an unusually large number of cases of thrombo-angiitis obliterans and other circulatory disturbances, and in less than one year, it was possible to irradiate more than fifty patients.

IMPORTANT FEATURES OF THE DISEASE

It is not within the scope of this paper to include any elaborate exposition of this disease. For detailed information on the subject, the reader is referred to Buerger's[5] contribution on circulatory affections of the extremities. Suffice it here to outline the most important features of the disease and to quote Buerger on a few pertinent questions on the clinical features and histopathogenesis:

> At the onset, thrombo-angiitis obliterans is essentially an inflammatory process, involving particularly the deeply situated and larger arteries and veins of the upper and lower extremities. Almost immediately after the inception of the disease, there follows extensive occlusive thrombosis, which subsequently gives way to a stage of healing or organization, the final result being the complete closure of arteries and veins over a large extent of their course by vascularized and canalized connective tissue. The involvement of the superficial veins, of the lower and upper extremities in the form of a

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5. Buerger, L.: Circulatory Disturbances of the Extremities, Philadelphia, W. B. Saunders Company, 1924, p. 214.

migrating or thrombophlebitis, occurs in about 20 to 25 per cent. of the cases.

Characteristic symptoms make their appearance usually in the following order: Pain, at first slight, gradually becomes more severe, ultimately excruciating and continuous. A small minority of the cases are free from this most disturbing and distressing feature of this condition. Pronounced vasomotor and trophic disturbances supervene, with intermittent claudication, erythromelia, ischemia, cyanosis, ulcers and finally gangrene. These symptoms are only mentioned at this point, but will be elaborated on subsequently when we discuss the effects of irradiation on each individually. The prognosis has been tersely expressed by Mueller,[6] who believes that "in present methods of treatment we have nothing to offer the patient, except amputation, which assures any reasonable promise of success."

CAUSATION

The cause of thrombo-angiitis obliterans has not been definitely established. Some infectious causative factors are strongly suggested by pathologic studies and by persistent leukocytosis observed over long periods in many cases. No leukocytosis was observed in any of our cases. No specific organism has been identified with the condition. The disease occurs almost uniformly in males of the Semitic race (three women and four non-Semitic in 500 cases studied by Buerger).[7] In our series, all were males and Jews. Tobacco is undoubtedly a predisposing factor, either by producing alterations in the blood vessels directly and making them more susceptible to inflammation and thrombosis, or indirectly by effects on the vasomotor apparatus. All our patients were heavy tobacco users. Some of our patients presented hypoglycemia, none hyperglycemia. This is contrary to the reports of fairly uniform hyperglycemia made by some authors, particularly Meyer.[8] Wassermann tests were uniformly negative, throughout our series, and none of our cases presented any clinical indications of syphilis in any form.

EXPLANATION FOR RELIEF SECURED

To attempt to analyze the reasons for the effects of irradiation in this condition is speculative, principally because the cause of thrombo-angiitis obliterans is so little known. We can only advance theoretical explanations for the relief secured, which are as follows:

1. The results are due to effects of irradiation on the paravertebral ganglions of the sympathetic nervous system, and those intimately associated portions of the vasomotor apparatus in this region. This theory is supported by recent investigations and by advances in the surgery of this condition and of angina pectoris, in which the sympathetic ganglions have been resected with alleged beneficial results. Bruning's experiments testify to the presence of long afferent sympathetic nerves associated with the peripheral blood vessels. The stimulating effects of irradiation in overcoming disease conditions in nerve as well as other tissues is beyond dispute, and we favor this explanation partially for the improvement of our patients.

2. The second theory concerns itself with alterations by irradiation of circulating cellular blood constituents, of such a character as to increase phagocytic processes. While we admit the strong influence of derangements of the vasomotor and sympathetic nervous systems in this affection, the latest investigations, particularly pathologic studies, point to infection as an additional important factor in the production of the condition. We are also inclined to view with favor this explanation of the improvement following irradiation, not as the result of direct exposure but rather indirectly from scattered rays acting on the spleen and other organs, for it must be borne in mind that any theory based on direct effects on circulating blood is refuted to a large degree by the total absence of any effects of beneficial character in the first cases treated when the radiation was directed over the extremities and the prostate region.

RESULTS OF IRRADIATION

An analysis of the result obtained in the fifty cases treated may be thus summarized:

The relief of pain usually occurred in about two or three weeks' time after the inception of the treatment, although immediate relief has been obtained several times. Relief is progressive and fairly uniform, the exceptions being less than 10 per cent. This is the most desirable as well as essential object in the treatment of this affection. With relief of this symptom, nature and time heal most of the lesions. Most of the amputations have been performed for the relief of the excruciating pain, which permits neither rest nor respite.

The average experience has been that the previous occupation or light work was resumed in five or six weeks. Some had not worked for two and three years previously. There were practically no exceptions to a uniform diminution of pain to such a degree as to permit sleeping flat on the back at least six hours a night, notwithstanding the fact that several had not slept recumbent for two or three years.

There was pronounced improvement in the intermittent claudication within one or two weeks, so that the patient could walk without distress for considerably longer distances. This disturbing symptom disappeared completely in 50 per cent. of the cases, after the sixth week, with very material relief from this distressing symptom in all.

Improvement in the circulatory and trophic disturbances is noticeable in from one month to six weeks. There is a distinct change in the color of the extremity, the cyanosis or rubor improving. The limbs become warmer and the patients are better able to withstand changes in temperature. No restorations of absent pulses were noted at any time in any of the cases, nor is it possible to state with positiveness that improvement in the pulse was noted in any instance. Logically, favorable changes in the circulation must be attributed to improvement in the collateral circulation as well as to diminution of the venous obstruction.

Phlebitis shows improvement after the first treatment. Active signs of inflammation disappear, with supervening signs of resolution. Venous and lymphatic stasis, if present, disappear rapidly. Ulcerations show a tendency to improve in two or three weeks, and disappear within two or three months. Granulations with epithelization at the margins is noticed early with the establishment very quickly of an appearance of an ordinary ulcer.

About ten ulcers were present in our series, and all were healed in from six to eight weeks. When gangrene of the toes or other parts was present, a

6. Mueller, G. P.: S. Clin. N. A. 2: 172.
7. Buerger, L.: Circulatory Disturbances of the Extremities, Philadelphia, W. B. Saunders Company, 1924, p. 277.
8. Meyer, W., cited by Bruning, F.: Klin. Wchnschr. 3: 208 (Nov. 11) 1924.

tendency of the part to become dry was noticed early, with early establishment of a line of demarcation.

Marked general improvement appears rapidly, thanks to relief of pain and to rest and sleep. The cachectic color, the agonized expression of untold continuous suffering and misery, disappear. The patients gain weight and look more rested and decidedly happier and more hopeful.

Our series included many severe cases, some presenting fulminating gangrene, others ulcerations; and with the exception of two cases, they all progressed favorably to an apparent arresting of the process and complete relief of all distressing symptoms. In the two exceptions noted the patients were in a bad way when admitted; nevertheless, both were relieved from pain, but the local conditions were beyond recovery, a toe sloughing off in one patient, and the other requiring an amputation in the thigh.

REPORT OF CASES

CASE 1.—M. K., a man, aged 31, a grocery clerk, had always been well except for occasional sore throats. His father died of old age. His mother, three sisters and two brothers were alive and well. There was no history of tuberculosis or cancer in the family, or of circulatory diseases of any character. The patient had influenza in 1918. He said that he had no venereal infection. The Wassermann reaction was negative. There was no history of frost-bite or of exposures to extreme cold. The patient started to smoke at the age of 18. At present he smoked from twenty to twenty-five cigarets a day. He served in the American Expeditionary Forces but saw no service in the trenches. A few months after his discharge from the army, the veins in his right leg became swollen and painful. This lasted for two months, during which time he could not work. When this condition subsided, he noticed that his right foot was slightly discolored and cold. Several attacks of phlebitis occurred during the last five years, each lasting two or three weeks. In May, 1924, he had a severe attack of phlebitis in the upper third of the right leg. He was treated in three different hospitals, but the condition became gradually worse. He then developed intermittent claudication. The pain became so intense as to prevent sleep during the ten weeks preceding his admission to the dispensary of the Hospital for Joint Diseases.

Examination on admission, Aug. 13, 1924, showed that he was fairly nourished, and apparently had a normal heart, lungs and abdomen. The tonsils were hypertrophied, but there was no indication of infection. The blood Wassermann reaction was negative. Examination of the blood sugar showed 110 mg. per hundred cubic centimeters of blood. The right leg presented thrombosed veins in the upper third, inner aspect. There were evidences of old thrombosed veins in the calf. The foot and ankle were cyanosed, red and cold. Slight edema of the foot and ankle were present. The nails were brittle and ridged. The dorsalis pedis and the posterior tibial pulses were absent. The popliteal pulse was diminished. The femoral pulse was apparently unaffected. The left leg showed no evidences of thrombosed veins, but the nails were brittle and ridged. The posterior tibial pulses were absent, but the dorsalis pedis pulse was present. The popliteal and femoral pulses were normal. The pulses were normal in the upper extremities. The urine examination showed nothing abnormal. The first treatment was given, August 14, and on the 18th he felt improved and on the following night slept recumbent. He slept better each successive night. The second treatment was given, August 21, and on the 25th he reported that he felt much better and that most of his pain was gone and that he slept most of the night without disturbance. The phlebitis showed signs of resolution, and he was able to walk for some distance without the usual signs of intermittent claudication. August 28, he received his third treatment. The improvement was progressive and the color of the affected parts was much improved. There was marked remission of the phlebitis. September 5, he received his fourth treatment, when the phlebitis was found to have almost completely disappeared. He now slept through the entire night. September 19, the fifth treatment was given. He felt very well and had no pain, except a little on walking. The patient received two more treatments at intervals of one month each, which improved him further. In December he went back to work as a grocery clerk. He was on his feet from eight to ten hours daily. He reported, March 2, 1925, for examination. The foot looked very much better, with good color. Cyanosis and coldness had disappeared. There had been no return of the phlebitis. He walked without pain, slept well and felt well in every way.

CASE 2.—S. F., a Russian, aged 38, a tailor, had never been ill. The family history was negative. There was no similar disease in any other member of the family. He was married and had four children. He had not had venereal infection. The blood Wassermann test was negative. The present illness began five years before, when he began to have symptoms of intermittent claudication and of migrating phlebitis over the left leg. These symptoms persisted for several months and were accompanied by very severe pain. Six months later he developed gangrene of the third toe of the left foot, which sloughed off, it taking two years for the wound to heal. After this, he felt fairly well, during which time he was able to work. About ten months before admission, the process became active again in the left leg and he developed gangrene of the fourth toe, involving the distal end of the metatarsal bone. He was under treatment at another institution without any relief, gradually becoming worse and the pain becoming excruciating. He took as much as one-half grain (0.03 gm.) of codein every two hours without any relief. He was admitted to the Hospital for Joint Diseases, Oct. 21, 1924. Examination showed the right foot to be edematous and cyanotic, the nails ridged and chalky. The pulses of the dorsalis pedis and posterior tibial were absent. The popliteal pulse was absent. The femoral pulse was perceptible. The pulses in the upper extremities were normal. The left foot was very edematous and painful to touch, and there was a large sloughing wound over the fourth metatarsal bone, anteriorly and posteriorly, and the fourth toe was gangrenous and sloughing. He received the first treatment, October 23. The next day he felt great relief from his pain, and there was a noticeable diminution in the degree of edema. October 28, the second treatment was given. He felt much better, and on October 30 the wound showed definite signs of healing. The condition improved gradually. He received five treatments, the first three at intervals of five days and the next two at intervals of ten days. At the end of the fifth treatment the wound was filled with healthy granulations, and epithelization was noticed at the margins of the wound. The pain and swelling were gone; he slept well and was gaining in weight. There was a gradual improvement up to March 5, 1925, when he was discharged from the hospital, with complete healing of the wound and recovery from the symptoms of the disease except for the changes in the pulse. He had been walking about the wards of the hospital for three weeks prior to his discharge, during which time he had felt entirely well and the wound had been healed.

CASE 3.—S. B., an Austrian, aged 34, a tailor, had never been sick except for some minor ailments. The family history was negative, there being no similar diseases in the family. The patient had had no venereal infection. About six years before admission, he developed pain in the calves of the legs on walking. This became more intense, gradually, until ultimately he could walk only half a block. He also noticed that his feet acquired a red color, especially after bathing. The pain became so severe that he could not sleep. He was treated at different clinics without any relief. Three years before, he developed an ulcer on the inner border of the right heel, which never healed. He had not been able to work for the last three years. Physical examination showed that he was poorly nourished and sallow. The right foot presented superficial varicose veins, some of which were thrombosed; the foot was slightly swollen, cold, edematous and cyanotic. A superficial necrotic ulcer was present on the inner border of the heel. The pulses of the dorsalis pedis and posterior tibial arteries were absent. The politeal pulse was faintly percep-

tible, and the femoral pulse was good. The left leg was red, but there were no swellings or ulcers. The nails were chalky and brittle; pulsations were absent in the foot, and diminished in the leg, but present in the thigh. He had not been able to sleep for several months, and walked with the greatest difficulty. The blood Wassermann reaction was negative. The first treatment was given, June 24, 1924; the patient felt somewhat worse for several hours after, but the following night felt slightly relieved and slept a few hours. The second treatment was given, July 1, and he reported, July 5, that his sleep was much deeper, longer and more restful, and that the pains were less. The third treatment was given, July 7, at which time he reported improvement. The ulcer showed signs of healing. The fourth treatment was given, July 14. On the 28th he reported that he felt much better and slept about six hours a night. He walked better, with very slight signs of intermittent claudication. The ulcer was healed. December 10, he reported that he felt well and had been working for more than three months.

CASE 4.—J. G., a Russian, aged 33, a truckman, was admitted to the dispensary, May 14, 1924. The family history was negative. There was no history of any illness. The patient had had no venereal infection. The present illness started about six months before, when he began to have pains in both legs on walking. The pain gradually increased in severity, until he was forced to give up his occupation. Pain had increased in the last few weeks and had become continuous and prevented sleeping. There was also migrating phlebitis of the left leg. The patient was fairly nourished and robust. The pulses of the dorsalis pedis were absent in both legs. The posterior tibial pulse was absent in the right leg and was diminished in the left leg. The first treatment was given, May 15. On the 21st, he reported very little improvement in his condition. The second treatment was given, May 21, and on the 23d he reported that he felt better and his pains were less severe. The next treatment was given, May 28, after which he felt better and there was considerable improvement noted in the color of the feet. June 6, after the fourth treatment, he attempted to go back to work, but found some difficulty in jumping on and off the truck. The fifth treatment was given, June 20. On the 11th he reported that he had very little pain, slept well, and was making a living by peddling. December 17, he reported that he was working again as a truck driver and had very little or no discomfort. He felt well up to the middle of January, 1925, when exposure to severe cold weather gave him considerable pain. He received another treatment in February and since then has been feeling better again, the pain having again disappeared. He is well and working as a truck driver at the present time (April, 1925).

CASE 5.—S. F., a Russian, aged 40, a leather goods cutter, gave no history of venereal infection or other infectious diseases. The family history was negative. He was married and had three children. The blood Wassermann reaction was negative. He was admitted to the dispensary, Nov. 7, 1923. About fifteen years before, the disease started with migrating phlebitis and intermittent claudication. He was treated in different clinics by different methods, but with no relief. Sleep had been impossible in the recumbent position for several months. Physical examination showed the left foot cold and clammy, with marked rubor. The nails were brittle and chalky. Superficial thrombosed veins were present in the left leg. The dorsalis pedis and posterior tibial pulses were absent. In the right leg the posterior tibial pulse was absent, but the dorsalis pedis pulse was good. The first treatment was given, May 25, 1924, and after the first treatment the pains were more intense for about twenty-four hours. The second treatment was given, June 2. On the 5th he reported that he felt better, slept a little better, and had less pain on walking. The third treatment was given, June 9. He had no pain except in the heel of the left foot, and he was able to walk a long distance with little or no pain. The fifth treatment was given, June 23, and he reported that he slept all night. He could walk several blocks without any pain or fatigue. He reported during November, 1924, that he was working at his old occupation, which required him to stand eight hours daily, and that he had very little or no discomfort. The condition continues the same up to the present time (April, 1925).

COMMENT

When the foregoing results are contrasted with the usual results of the various forms of therapy, which terminate in amputations in a very high percentage; when one considers the uniformity in improvement in trophic and circulatory disturbances, as well as the relief of the most distressing symptom, pain, heretofore never completely suppressed; when one considers the percentage of amputations in our series, 2 per cent., contrasted with from 60 to 80 reported elsewhere, one must admit the tremendous advantages of this form of treatment over all other nonsurgical methods ever advocated. We are fully cognizant of the fact that this is a preliminary report, and that our observations on this form of therapy do not extend over more than a year and a half; nevertheless, a most conservative estimate of its value, irrespective of the possibilities of recurrence of symptoms and we have no reason to anticipate them, must evaluate this form of treatment as second to none up to the present time.

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THE QUALITY OF NITROUS OXID MANUFACTURED IN THE UNITED STATES*

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The extensive use of nitrous oxid as an anesthetic in dental surgery and, more recently, in general surgery, and the possibilities of its containing dangerous impurities, owing to careless manufacture or lack of control, warranted a thorough investigation by the Bureau of Chemistry of the quality of this gas available on American markets.

It has been supposed that the odor of the gas is a good criterion of its purity, and experienced anesthetists have depended on the odor as a guide to its purity. The safety of such a procedure, however, is doubtful.

The seriousness of the presence of even small quantities of impurities in nitrous oxid,[1] particularly the higher oxids of nitrogen, is hardly appreciated by the average user, and the detection of these small but dangerous amounts by odor is unlikely.

Lehmann and Hasegawa,[2] in a study on the toxicity of several oxids of nitrogen, have found that as little as 0.078 per cent. of nitric oxid, 780 parts per million, kills animals quickly (rabbits and cats), and that even one tenth of this concentration can be borne for only half an hour, while from 0.0117 to 0.0156 per cent., or from 117 to 156 parts per million is dangerous. Results show that 0.0039 per cent., or 39 parts per million, can be tolerated by many individuals for several hours.

The preparation, analysis and purification of nitrous oxid have been thoroughly reviewed by Baskerville and Stevenson,[3] as well as by a number of other investi-

* From the Bureau of Chemistry, U. S. Department of Agriculture.
* Investigations and analyses were made by various inspectors and chemists of the Bureau of Chemistry.

1. Warner, A. R.: Manufacture and Administration of Nitrous Oxid for Anesthesia, J. A. M. A. **65**: 1973 (Dec. 4) 1915.
2. Lehmann and Hasegawa: Studies on the Action of Technically and Hygienically Important Gases and Vapors on Man: The Nitrous Gases: Nitric Oxide, Nitrogen Peroxide, Nitrous Acid and Nitric Acid, Arch. f. Hyg. **77**: 323-368, 1913.
3. Basherville and Stevenson: Indust. & Engin. Chem. **3**: 579, 1911.

gators; Smith and Leman[4] investigated the problem in 1911 for the Council on Pharmacy and Chemistry, and drew up the standard for nitrous oxid N. N. R. (before it became official in the U. S. P. IX).

Nitrous oxid is made by the thermal decomposition of ammonium nitrate, in which the products of decomposition are theoretically nitrous oxid and water ($NH_4NO_3 - N_2O + 2H_2O$).

In actual practice, aside from the possibility of impurities derived from the raw material, such as chlorids and sulphates, it is virtually impossible completely to prevent side reactions, resulting particularly in the higher oxids of nitrogen. It is therefore necessary to subject the gas to elaborate purification processes in order to free it from these impurities.

Results of Analysis of Samples of Nitrous Oxid

		U. S. P. Tests				Nitric Oxid by		
Sample No.	Carbon Dioxid	Odor	Halogens	Acidity	Reducing Substance	Naphthylamine and Sulphanilic Acid	Reduction of Potassium Permanganate	Starch Iodid
1	Trace	O K	None	None	O K	Minute trace	Amount in 101 gm. gas not titratable	.....
2	Present	O K	None	None	O K	Minute trace	Amount in large volume of gas not titratable	.....
3	Present	O K	None	None	O K	Minute trace	Amount in 77 gm. gas not titratable	.....
4	Present	O K	None	None	O K	Minute trace	Amount in 50 gm. gas not titratable	.....
5	Approx. 0.3%	O K	None	None	O K	Minute trace	Amount in 40 gm. gas not titratable	.....
6	Absent	....	None	None	O K	Absent*	Absent	.....
7	Absent	....	None	None	O K	Absent*	Absent	.....
8	Present	O K	None	None	O K	Absent	Minute trace running gas 3 hours	Minute trace
9	Present	O K	None	None	O K	Trace	0.008% NO	Trace
10	Present	O K	None	None	O K	Absent	Absent	.....
11	Present	O K	None	None	O K	Absent*	Absent	.....
12	Absent	....	None	None	O K	Absent	.....	.....
13	Absent	....	None	Minute trace	O K	Present 7.2 parts per million	.....	.....
14	Absent	....	None	None	O K	.....	.....	.....

* Additional nitrite test on gas drawn from inverted cylinder was negative.

Constant vigilance and testing throughout the manufacturing processes, from the original reaction to its ultimate storage in the cylinder, are necessary to assure a high-grade gas.

PROCESS OF MANUFACTURE

Purified ammonium nitrate is heated in retorts to about 240 C., which causes the decomposition into water and nitrous oxid. Water is removed by condensation, and the nitrous oxid gas is then subjected to a series of purifications for the removal of higher oxids of nitrogen, ammonia, and acid impurities. The gas is cooled, compressed to a liquid, and packed in steel cylinders under high pressure in order to keep it in liquid form. The liquefaction also serves to separate the nitrous oxid from contaminating nitrogen. During all the stages of its preparation, the nitrous oxid gas is subjected to repeated tests to insure the absence of impurities from the finished product.

INVESTIGATION OF NITROUS OXID BY BUREAU OF CHEMISTRY

The bureau's survey of this industry included an examination of raw materials, the collection and examination of representative samples of the gas as found on the market in different sections of the United States, and interviews with surgeons, dentists and anesthetists.

The findings, though gratifying in the main, show the need for a close and continued watch over the quality of nitrous oxid being marketed.

The production of this important anesthetic in the United States is in the hands of comparatively few manufacturers. It is a highly specialized industry, and there is every reason to believe that safe nitrous oxid is being marketed. This conclusion was borne out by the present investigation of representative samples.

EXAMINATION OF SAMPLES

Samples of gas were not only tested for compliance with the U. S. P. requirements, but were subjected to further rigid examination for the presence of nitric oxid. It is particularly gratifying to the bureau that none of the samples examined contained enough impurities to warrant action under the Food and Drugs Act. While a few samples showed the presence of perceptible traces of nitric oxid, none contained harmful quantities.

The accompanying table gives analytic data on a number of samples collected from various points throughout the United States.

4. Smith, W. R., and Leman, E. D.: The Purity of Nitrous Oxid, J. A. M. A. **57**: 577 (Aug. 12) 1913. Haskins, H. D.: J. Am. Chem. Soc. **33**: 1116, 1911. Cleveland M. J., August, 1914; abstr., J. A. M. A. **63**: 1231 (Oct. 3) 1914. Hackh, I. W. D.: J. Am. Pharm. A. **13**: 3, 191, 1924. Allison, A. C.; Parker, W. L., and Jones, G. W.: Technical Paper 249, U. S. Bureau of Mines, 1921.

ACUTE TOXIC ENCEPHALITIS OF NASAL SINUS ORIGIN

REPORT OF TWO OPERATIVE CASES WITH RECOVERY *

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Acute toxic encephalitis may be a cerebral manifestation of a sinus infection and confused with many of the other intracranial diseases. There are four possible routes by which the toxins may enter the cranial cavity: (1) by continuity; (2) by way of the lymphatics; (3) by way of the blood stream, and (4) by way of the lymphatic sheaths of the olfactory nerve.

Oppenheim noted that the cerebral signs which appear as the result of an infection may have either a toxic origin or a hemorrhagic, embolic or thrombatic basis. He states that not all the symptoms that develop with encephalitis are based on demonstrable pathologic changes but may be caused by toxic injury to the brain tissue.

Hajek directed attention to the possibility of brain involvement resulting by continuation even though the bones and dura may appear intact macroscopically.

Zwillinger, in 1913, demonstrated on rabbits with color fluid the relation of the perimeningeal spaces of the subdural and subarachnoid with the lymphatic network of the mucosa of the upper sinuses.

Dana states that acute nonsuppurative encephalitis is often characterized by symptoms of general infection or toxemia with severe cerebral irritation, and that it is a rather common condition complicating the septic states.

* Read before the Richmond Eye, Ear, Nose and Throat Society, March 17, 1925.

The diagnosis of acute toxic encephalitis of rhinologic origin must be based on the following factors: (1) a diseased paranasal sinus; (2) cerebral symptoms, and (3) analysis of the spinal fluid. The various forms of meningitis can be ruled out only by an exhaustive study of the patient and spinal fluid. Diffuse purulent leptomeningitis gives a polymorphonuclear cell count in excess of from one to two thousand, the presence of bacteria, and a marked globulin reaction. To distinguish syphilitic meningitis, we have the colloidal gold curve, Wassermann reaction and therapeutic test, with probably some physical signs to help us out. Tuberculous meningitis often shows a clear spinal fluid and, on standing, a cloudy precipitate; however, either the recovery of the tubercle bacillus, animal inoculation or a lesion elsewhere in the body is essential for a positive diagnosis. Epidemic encephalitis may be confusing; but the presence of an epidemic, frequent increase of small mononuclear lymphocytes in the spinal fluid, positive globulin and colloidal gold curve in the syphilitic zone with negative suppurative signs are helpful. Brain abscess is of the greatest concern since it may be heir to many or practically no symptoms whatever. Localizing signs should be elicited if stupor, mental impairment or coma persists. Study of the spinal fluid may or may not be helpful in differentiating the two. Meningism may be looked on as a manifest meningitis with a normal spinal fluid analysis, and serous meningitis considered an advanced meningism plus intraspinal pressure. These conditions are essentially borderline in character and often require careful group study to arrive at the proper diagnosis.

REPORT OF CASES

The following two cases illustrate the incidence of serious sinus infection of a latent nature:

CASE 1.—R. D., a white man, aged 50, admitted to the Tucker Sanatorium, April 18, 1923, had been subject to kidney colic years before, and influenza six months before. The patient had been failing in health since the influenza attack. His wife stated that for the last three months he had shown increasing signs of drowsiness, fatigue and impairment of memory. His general cheerful conduct had changed to a depressed stupid manner. He was unable to transact his usual daily brokerage business. He complained of a dull pain and headache over the left eye.

Physical examination by Dr. Vanderhoof showed the heart, lungs and abdomen normal. The blood pressure, count and chemistry were normal. The Wassermann reaction was negative. The basal metabolism was normal. Roentgen-ray examination of the head and teeth was negative. Urinalysis was negative. Examination of the eyes by Dr. Hill showed arteriosclerosis of the retinal vessels. The left disk was blurred along the nasal margin, but otherwise was normal.

Examination by Drs. Tucker and Gayle showed that the patient had impaired memory, questionable delusions and depressed conduct. He was drowsy, stupid, and conversed in monosyllables. The neurologic findings were essentially negative except for a slight increase in the spinal fluid pressure (12 mm.). The fluid was clear, the count normal, globulin normal, Wassermann reaction negative and colloidal gold curve normal. Our examination of the ears and throat were negative. The sinuses showed purulent involvement of all on the left side, from the clinical and roentgen-ray standpoint.

May 10, the left ethmoids were cleaned out, the frontal sinus was drained and the sphenoid was opened. The ethmoid labyrinth was found to be very soft, and the cribriform plate necrotic. When the probe was used, an expulsion of clear fluid was noted to the amount of 3 or 4 drams, indicating an epidural cyst or spinal fluid escape. The latter sounds more plausible, though the dura area appeared to be firm and distinctly intact. A right angle tipped probe could easily be manipulated between the dura and the cribriform plate.

May 14, four days after operation, the patient showed decided mental improvement. Lethargy was less. He was cooperative and interested in conversation.

May 22, the antrum was operated on, revealing diseased polypoid contents.

June 22, the patient appeared to be mentally alert and was talkative. He was interested in reading and conversation, and his memory was good. He stated that he had no recollection of his trip to the hospital or of the first operation.

December 29, the patient returned to Richmond alone. He appeared to be normal and said that he felt well.

CASE 2.—Mrs. O. A. W., white, aged 28, admitted to the sanatorium, Jan. 6, 1925, had always been nervous. She had had two goiter operations, the last one in 1920. The last pregnancy was normal. The baby was now 3 weeks old. One week previous to entering the sanatorium, the patient complained of feeling bad, and refused to talk. She was troubled with diplopia and blurred vision. She refused nourishment on account of pain on swallowing. When admitted, she was listless, depressed and mentally clouded. She refused to talk. There was dripping of saliva. No headache, vomiting, nausea, convulsions or constant pain had been noted since the onset.

Examination by Drs. Tucker and Gayle revealed good nutrition. The cardiovascular apparatus was normal. The temperature was 100.4 F.; the pulse, 90; the skin dry and thickish. The urine showed a trace of albumin, and a few blood and pus cells; otherwise it was normal. Examination of the blood showed: hemoglobin, 81 per cent.; white cells, 7,600; polymorphonuclears, 76 per cent. The Wassermann reaction was negative. The knee, elbow and Achilles jerks were present. There was a questionable Babinski reflex on the right. The Oppenheim, Gordon and Kernig signs were negative. There was no diplopia. The disk was pale. There was double ptosis. There was a fine lateral nystagmus. The pupils reacted to light and in accommodation. Right facial weakness was questionable. There were no delusions or hallucinations, no cooperation, no obsessions or phobias, complete lack of emotion, no attention gained, and consciousness cloudy. The spinal fluid pressure was 2 plus, and clear; globulin, 1 plus; count, normal. The Wassermann reaction was negative.

My examination showed the ears and throat to be essentially normal. The sinuses showed slight atrophic changes, with semisolid débris in both ethmoid regions. Roentgen-ray examination of the sinuses showed the left antrum dense, with cloudy changes in both ethmoids. The patient appeared to be comatose, and no attention or cooperation was gained. Manipulation of the probe in the nose and sinuses and supra-orbital deep pressure indicated absence of sensation.

January 9, the morning temperature was 101; afternoon temperature, 103. That afternoon I did a double ethmoid and sphenoid operation. No anesthetic of any nature was used. There was apparently complete narcosis. The cells were necrotic and purulent in character. That night the temperature climbed to 105. Next day it ranged around 104. Consciousness and speech returned; the patient accepted nourishment. On the second day after operation there was mental improvement to a normal degree. The temperature was down to 101. Several days following the temperature varied from normal to 100. One week subsequent to the first operation, the antrum was operated on under local anesthesia. The patient was discharged from the hospital three weeks later, free from symptoms.

COMMENT

Patient 1 was evidently suffering from a mild progressive toxic encephalitis secondary to the suppurative ethmoiditis, probably by direct continuity.

Case 2 suggests a violent toxic absorption.

Cases simulating this picture frequently lead to brain operations with disastrous results. Patients manifesting such symptoms should emphasize the importance of a careful rhinologic examination.

As the symptoms are toxic in nature, the improvement may be sudden or gradual after the eradication of the septic focus.

Professional Building.

HYPERPNEA AS A METHOD OF DIAGNOSIS *

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The study of Rosett [1] on the experimental production of rigidity was undertaken on organic neurologic cases. Some of his patients, in addition to rigidity, also showed phenomena of an affective nature, emotional outbursts and a condition that could be interpreted as an irritation of the thalamus. On account of such emotional outbursts, I undertook to try his method on patients suffering from purely functional conditions.

I selected five patients with an established diagnosis. The cases were classified as hysteria, anxiety neurosis and psychoneurosis. All the patients were women, their ages ranging between 18 and 30. The results obtained are briefly reviewed here.

REPORT OF CASES

CASE 1.—A woman, aged 28, American born, a factory worker, came to the clinic on account of weakness and a slight tremor of the right hand. The history was suggestive of a possible postencephalitic syndrome. The neurologic examination was negative.

After deep, rhythmic breathing for three minutes, the patient complained of dizziness. After six minutes, she felt formication in the fingers. After eight minutes, tetany appeared, very strong in both hands. At the same time, there were involuntary movements of the toes and chorea-like twitchings of the muscles of the face. The experiment was discontinued, but the tetany persisted for two minutes. The tremor was much increased. The patient was greatly frightened. During the experiment, no Babinski reflex was obtained. All the deep reflexes were lively.

The interpretation of the findings points to an organic nature of the illness, shown by the increase of the chorea-like motions and the intensification of the tremor. She was probably suffering from a mild postencephalitic syndrome.

CASE 2.—A woman, aged 22, a dressmaker, complained of general nervousness, crying spells and weakness. The examination was negative.

Hyperpnea for five minutes brought about a tremor of the entire body, which soon became a shaking of the hips and abdomen. After seven minutes, she burst out crying. The experiment was discontinued, but she kept on sobbing and wringing her hands. She answered questions, saying that she did not know the reason for her crying, but she could not help it. No actual tetany was noticed. The attack induced by the experiment was identical to the usual attacks from which she suffered.

This was a case of an anxiety neurosis.

CASES 3, 4 and 5.—The history of these patients was essentially the same. None of them showed organic findings.

In one patient, with anxiety neurosis, no results were obtained after ten minutes, then after fifteen minutes. She also refused to cooperate.

In a case of hysteria, after six minutes the patient complained of formication. After eight minutes, there was shaking of the body. The patient became nervous. After ten minutes, tetany appeared. The patient began to laugh hysterically. The experiment was discontinued, and she quieted down.

The other case gave about the same results.

The test was also tried on a patient suffering from a slight exophthalmic goiter. After three minutes, she began to complain of palpitation of the heart. The pulse was 130, and it was found advisable to discontinue the test. On account of similar experiences with patients showing thyroid disturbances, it seems that caution is necessary when trying the test with them.

Four other patients were tried for diagnostic purposes. The clinical diagnosis in two patients was idiopathic epilepsy, and in two other patients hysteria with major attacks of hysteria.

CASE 6.—A girl, aged 16 years, a factory hand, complained of epileptic attacks. No description of the attacks could be obtained, but on account of loss of consciousness, and salivation during the attacks, epilepsy was suspected. The illness had lasted eight months. There were no organic findings on examination.

After five minutes she complained of a tingling in the fingers, and after another minute she showed involuntary movements of the hands and legs. There was a slight shaking of the thighs. Suddenly the patient kept her breath, then she inspired deeply and then there was short, rapid breathing. After eight minutes she closed her eyes, the body became stiff, and she began to throw herself upward. She sighed a good deal and bit her lips. At the end of the attacks, saliva began to come from her mouth, but no froth such as is seen in epileptic patients.

It was a typical attack of hysteria major. During the attack, the pupils reacted to light. At subsequent dates the attacks were induced in the presence of other members of the staff, with the same results.

In this patient, therefore, the diagnosis of epilepsy was ruled out.

The other three patients gave important results, as the diagnosis of epilepsy, which was originally made in two of them, was found to be correct, the attacks induced being genuine attacks of epilepsy. In the third patient in whom the diagnosis of hysteria was made, the attack showed itself to be epilepsy during the test.

The time for inducing the attacks varied from patient to patient. Tetany may not appear in all the patients; as a rule, the patient complains of formication in the fingers. The pupils were found to react in all the patients except those suffering from epilepsy. The deep reflexes were, as a rule, increased in all the patients. Tremor and shaking of the body appeared in all, but choreiform movements took place only in patients in whom there was a possible organic involvement.

CONCLUSIONS

1. Hyperpnea produces in the neurotic, in addition to involuntary movements of the fingers, tetany and emotional outbursts. In hysterical patients, the outbursts are identical to the hysterical attacks of such patients.

2. In organic cases it increases the symptoms, and may serve to establish (in some patients) the organic or functional character of the condition.

3. The method is of use in patients suffering from hysteria with major attacks or from epilepsy who are unable to give a clear description of the attacks. In such patients, the method will reproduce the attack.

4. Hyperpnea should be used cautiously in patients suffering from thyroid disturbances.

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* From the third division of the New York Neurological Institute.

1. Rosett, Joshua: The Experimental Production of Rigidity, Brain 47:293 (Aug.) 1924.

School Nurses in New York.—In New York State, 258 nurses are now employed by school authorities. With few exceptions, they serve full time. Cities have 133 school nurses, large villages forty-nine, and rural districts seventy-six. In addition to these, 243 nurses employed by outside agencies are doing some work in schools. The average salary paid to city school nurses is $1,318, and to rural school nurses, $1,548. Nearly all our school nurses are certified as health teachers. High school graduation and six semester hours of postgraduate work are now required to qualify as a health teacher. Nurses occupy a very important place in our school health program. The efficiency of the service in any community is largely determined by the efficiency of the school nurse.—Howe, W. A.: *Am. J. Pub. Health* **15**:308 (April) 1925.

THE SCARLET FEVER TOXIN AND THE DICK TEST*

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AND
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The work of the Dicks and of Zingher on scarlet fever, reported from time to time in THE JOURNAL, is of great theoretical and practical importance. We have tried to repeat some of it.

The toxicogenic properties of nine strains of hemolytic streptococcus, obtained from the throats of scarlet fever patients in the first days of illness, were examined. Seven of them were found to be producers of toxin.

In preparing the toxin, we have used the broth of fermented meat with 2 per cent. Witte's peptone with an alkalinity of p_H 7.8. Five per cent. citrated or defibrinated sheep's blood was added to the broth.

After incubation for four days at 37 C., the toxin was filtered through filter paper, and 0.25 per cent. phenol (carbolic acid) was added to it.

The strength of the first portions of our toxin was 1:250, and later 1:500.

At our disposal we had not only our own toxin, but also the toxin sent by Dr. Dick, to whom we and Professor Korshun, who managed our work, are indebted.

Following Zingher's advice, we have used the control test with toxin that had been boiled for one hour.

We have twice examined the results in the first series of injections (377 cases), at the end of twenty-four hours, and later, at the end of forty-eight hours, and we perceived that the reactions after twenty-four hours became pale, and in only fourteen cases (3.7 per cent.) did we notice a reinforcement of the reaction at the end of forty-eight hours. Of the latter, in four cases the reaction appeared only during the second twenty-four hours, and in ten cases by this time the reaction had become considerably reinforced. Later we examined the reaction only at the end of twenty-four hours.

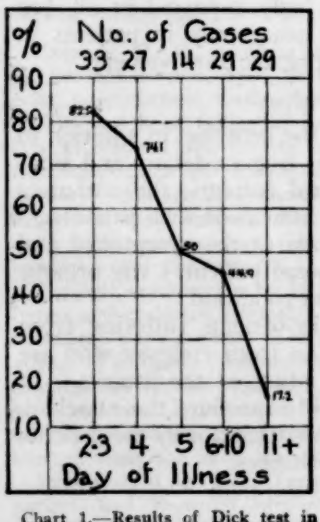

Chart 1.—Results of Dick test in scarlet fever patients.

The important thing that we had to consider was whether or not our toxin was giving the same results as the Dick toxin.

For this purpose, both toxins were applied to fifty patients developing scarlet fever. In only two cases was a discordance perceived between the two toxins: Dick's toxin gave a slight positive reaction; our toxin gave a negative one.

Such divergence cannot be of serious importance, because, as Park has shown, by using for the Schick test the very same portion of diphtheria toxin for injection on the two hands at once, the results can be different in 2 per cent.

For further comparison, we injected 50 per cent. of the children in a children's home with our toxin; the other half, of the same age, with Dick's toxin. Dick's toxin has given 50 per cent. positive reaction, and ours, 48 per cent.

Such comparison shows that there is no difference between the effects of these two toxins.

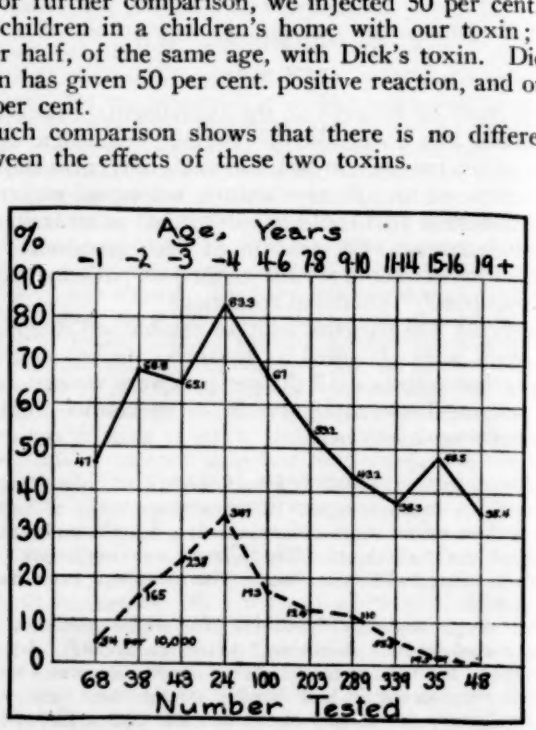

Chart 2.—Solid line, percentage of Dick reactions in children of various age groups and in adults; broken line, proportion of patients who developed scarlet fever in Moscow, per 10,000, from Oct. 1, 1924, to Jan. 1, 1925.

RESULTS WITH THE DICK TEST IN ACUTE CASES, AND IN CONVALESCENTS

Dick's test has been applied to 133 scarlet fever patients.

Chart 1 shows that 82.5 per cent. had a positive Dick reaction during the first days of illness, and 17.2 per cent. gave a positive Dick reaction during convalescence.

The comparatively low percentage of positive Dick reactions during the first days of illness can be explained by the mild character of the present scarlet fever epidemic in Moscow.

An interesting fact is that in three cases, after injection of Moser antitoxic serum, the Dick test was negative, and in one of these cases, as the Dick test was made before the injection of Moser serum, the result was positive.

Pseudoreactions by our tested scarlet fever patients have been very seldom noted.

THE DICK TEST ON HEALTHY PERSONS

In all, 1,187 reactions have been made, mostly among the children of the closed infants' homes in Moscow. The average percentage of positive reactions was 48.1; this includes the combined results, 22.7 per cent. There were 22.7 per cent. noted pseudonegative reactions.

The upper curve in Chart 2 shows the percentage of the Dick reactions on children of different age groups and on adults. The lower curve indicates the incidence of scarlet fever, according to different age groups of the population of Moscow, from Oct. 6, 1924, until Jan. 6, 1925. The incidence of scarlet fever was counted in 10,000 inhabitants of the same age. This shows that the proportion of positive Dick reactors

* From the Epidemiologic Section of the Metchnikof Institute for Infectious Diseases, Professor Korshun, director of institute; Dr. Birger, director of epidemic section.

of different ages is in concordance with the incidence of scarlet fever in the same age. There is an exception: Persons from 15 to 16 years of age show a rise of the curve of the positive Dick test, but without increasing of the incidence of scarlet fever in this group. It should be remembered that the same was found with the Schick test of diphtheria.

In comparing our results with those of Zingher, some important facts in our experiments are to be noted:

1. A comparatively lower percentage of positive reactions on children from birth to 6 months of age. The total number of tests made on this age by Zingher and ourselves is not great. Children of from 2 to 3 months of age, often giving negative Dick tests, were probably less experimented on by Zingher than by ourselves.

2. Some decrease of our curve line on children over 1 year, and a new rising of the curve line on children over 3 years. This must be explained as follows: It should be known that the closed infants' institutions in Moscow, where we performed our reactions, are of two kinds: (*a*) Institutions for children under 3 years of age, where the children are exposed to spontaneous immunation. Therefore the curve of the positive Dick test decreases. (*b*) Institutions for children over 3 years. Among this group, children who have never been in children's homes are admitted, and who are not immune, and consequently give cause for the new rising of the curve.

3. We have in summary obtained a higher percentage of positive Dick reactions than Zingher. This results from the fact, possibly, that during the years preceding 1924 there was no great epidemic of scarlet fever in Moscow.

4. We have obtained a high percentage of positive reactions among adults, but it is to be noted that the experimental tests have been made only on the medical personnel of the Metchnikoff Institute, and of course, these results cannot give a real idea concerning the percentage of positive reactions among the adult population of Moscow. The higher percentage of no specific reactions may be explained by the fact that our toxin was not purified; nevertheless, the results of Dick's reactions were always clear.

RESULTS WITH THE DICK TEST ON PERSONS WHO PREVIOUSLY HAD SCARLET FEVER

Fourteen persons have been tested who undoubtedly were formerly ill with scarlet fever. Among them only two showed a positive reaction (they were ill twenty and thirty-five years ago). Among 111 persons who had supposed scarlet fever, there were nineteen positive reactions and seven combined reactions, or 23.4 per cent. This figure corresponds to the higher percentage of positive reactions, during convalescence, 17.2 per cent.

INCIDENCE OF SCARLET FEVER AMONG CHILDREN FORMERLY TESTED WITH SCARLET FEVER TOXIN

Among 600 children who had formerly shown a positive or combined Dick test, four cases of scarlet fever are already noted; among 600 children who showed a negative reaction there are none.

Ker, McCartney and McGarrity,[1] in their recently published work, cite results partially similar to ours: a comparatively lower percentage of positive reactions in the first days of illness (73.9 per cent.) and a higher percentage (14.3 per cent.) in convalescence; a higher average percentage of positive reactions especially by adults, with positive reactions (20 per cent.) among persons who declare that they had scarlet fever.

1. Ker, C. B.; McCartney, J. E., and McGarrity, J.: Lancet **1**: 230 (Feb. 7) 1925.

SUMMARY

1. Among the strains of hemolytic streptococcus obtained from scarlet fever patients, there are often strains able to produce toxin.

2. Our toxin has the same effect as the toxin obtained from Dr. Dick. It must be noted that our toxin has a stronger nonspecific irritating effect, which must be put down to its defects.

3. The results of the Dick reaction on scarlet fever patients show a regular fall of the curve of positive reactions during the illness. In comparison with Dr. Zingher, we received a smaller number of positive Dick reactions for the first days of illness and a higher figure in convalescence.

4. The results of Dick reactions on healthy persons in Moscow give a higher percentage, comparatively, with Zingher.

5. The curve of positive Dick reactions among different age groups of the population of Moscow is in conformity with the incidence of scarlet fever in the same age groups during the last epidemic of scarlet fever in Moscow.

6. The persons who were formerly ill with scarlet fever, on being tested, sometimes give a positive Dick reaction.

7. As a whole, our results differ somewhat from Zingher's figures, but there are no facts contradicting the thesis of Dr. Dick.

RESULTS WITH THE SKIN TEST FOR SUSCEPTIBILITY TO SCARLET FEVER

PREVENTIVE IMMUNIZATION WITH SCARLET FEVER TOXIN *

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In January, 1923, we reported a skin test for susceptibility to scarlet fever,[1] and in February of the same year, preventive immunization with scarlet fever toxin.[2]

The toxin was found in filtrates obtained from cultures of the hemolytic streptococci that had produced experimental scarlet fever in human beings.

By means of cultures, inoculation experiments,[3] and the production of the corresponding antitoxin,[4] we were able to show that we were dealing with a true toxin.

This toxin is resistant to heat at temperatures ordinarily employed to kill bacteria, but is destroyed at temperatures between 85 and 100 C.

The sterile toxin, injected into susceptible persons, is capable of producing the general malaise, nausea,

* From the John McCormick Institute for Infectious Diseases.

1. Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever, J. A. M. A. **82**: 265-266 (Jan. 26) 1924.
2. Dick, G. F., and Dick, Gladys H.: Scarlet Fever Toxin in Preventive Immunization, J. A. M. A. **82**: 544-545 (Feb. 16) 1924.
3. Dick, G. F., and Dick, Gladys H.: Experimental Scarlet Fever, J. A. M. A. **81**: 1166-1167 (Oct. 6) 1923.
4. Dick, G. F., and Dick, Gladys H.: A Scarlet Fever Antitoxin, J. A. M. A. **82**: 1246-1247 (April 19) 1924.

vomiting, fever and rash of scarlet fever. The onset of these symptoms is preceded by a definite latent period such as characterizes the action of toxins in general, but much shorter than the incubation period of scarlet fever.

This effect of the sterile toxin on susceptible persons, the negative skin reactions in convalescent scarlet fever patients, the positive reactions in persons susceptible to the disease, the neutralization of the toxin by blood serum from convalescents, and the beneficial action in scarlet fever of the antitoxin [5] obtained by immunizing horses with sterile toxin show that the toxin is specific for scarlet fever.

PREPARATION OF THE TOXIN FOR SKIN TESTS AND PREVENTIVE IMMUNIZATION

The toxin for preventive immunization and skin tests is obtained by inoculating plain broth with pure cultures of scarlet fever streptococci.[6] One-tenth per cent. of sterile blood may be added to the broth. We have used defibrinated sheep's blood.

The broth cultures are incubated from four to six days, and passed through filter paper until clear; then through Berkefeld N filters. Filtrate from any contaminated flasks is discarded. The lot of toxin to be standardized is thoroughly mixed, and passed through Berkefeld W filters. Cultures are made to determine the sterility of this last filtrate, and it is stored in sterile glass bottles in the refrigerator.

If a preservative, such as 0.5 per cent. phenol (carbolic acid) is employed, it may be added to the Berkefeld N filtrate. A precipitate forms slowly in the phenolized toxin, and it is allowed to stand until precipitation is complete before the final filtration.

STANDARDIZATION OF THE TOXIN

To standardize the toxin, 1 c.c. is placed in a sterile 1 liter volumetric flask, and diluted to 1,000 c.c. with sterile physiologic sodium chlorid solution. Another 1 c.c. is made up to 2,000 c.c. with sterile salt solution. Skin tests are made with 0.1 c.c. of each dilution on one arm of a susceptible person, and a test is made on the other arm of the same person with 0.1 c.c. of the standard skin test solution. The reactions are observed at the end of twenty-four hours. If the reaction with the 1:1,000 dilution of the new toxin is weaker than the reaction with the standard skin test solution, the entire lot of toxin is discarded.

If the reaction with the 1:2,000 dilution is stronger than that of the standard skin test solution, similar tests are made with higher dilutions. If the 1:2,000 dilution gives a weaker reaction, while the 1:1,000 test is stronger than that of the standard solution, a dilution of 1:1,500 is tried.

Various dilutions are made until one is found that gives reactions corresponding exactly to those obtained with the standard solution. This dilution is then checked against the standard solution in a series of at least twenty susceptible and ten immune individuals. The positive tests should include slightly, moderately and strongly positive reactions. Records of the reactions are made showing their measurements in millimeters in two diameters, the intensity of color, and the presence or absence of swelling. Tests in slightly susceptible persons sometimes reveal errors in standardization that are not apparent in the more strongly positive reactions.

Attempts have been made to standardize scarlet fever toxin by means of skin tests on animals. But on account of the comparative insusceptibility of animals to scarlet fever, it is not practical to depend on them for standardization of toxin to be employed in testing and immunizing human beings.

The greatest possible accuracy in standardization is essential to the successful use of scarlet fever toxin. We have tested samples of skin test solution from various sources, and found them ranging from one fourth to four times the proper strength.

Tests of toxin kept sterile and undiluted in the refrigerator showed no appreciable deterioration at the end of three months, six months and one year. Toxin kept at room temperature in the skin test dilution for two years had completely lost its potency.

PSEUDOREACTIONS

If foreign protein in the culture medium is reduced to a minimum, and no toxin is used that is not sufficiently strong to necessitate diluting at least 1:1,000 for the skin test, pseudoreactions are practically eliminated.

Zingher [7] employed medium containing considerable amounts of horse blood, and reported frequent pseudoreactions. We have avoided the use of horse blood on account of possible sensitization to horse serum during the course of preventive immunization, and because of its tendency to produce pseudoreactions in the skin test. Much of the skin test and immunizing toxin distributed by commercial firms has been prepared from medium containing horse blood.

It is probable that most of the pseudoreactions not due to faulty technic are caused by an unnecessary amount of protein in the toxin solution.

SKIN TEST DOSE

The highly immune person may show a negative reaction with 150 times the skin test dose of toxin, while the extremely susceptible person may react to a fraction of the skin test dose.

It required about one year to determine the proper skin test dose. Tests were first made with various dilutions of toxin in a series of convalescent scarlet fever patients. The largest amount of toxin that gave negative or only slightly positive reactions in immune persons was thus determined. A series of persons who gave no history of scarlet fever was then tested with higher dilutions to find the smallest amount of toxin that gave positive reactions in susceptible persons. The proper skin test dose lay somewhere between the maximum and minimum thus determined.

Skin tests with various dilutions within this range were made on persons who had recently been exposed to scarlet fever, or were about to be exposed. Complete objective descriptions of the reactions with the various dilutions were recorded, and the persons tested were observed closely during the time of their exposure. Some in this series contracted scarlet fever, and we were enabled to determine the dose of toxin that gave skin tests indicative of susceptibility to scarlet fever.

A positive reaction may be produced in immune persons by injecting a larger skin test dose. And negative reactions may be obtained in suscpetible persons by reducing the dose.

5. Dick, G. F., and Dick, Gladys H.: Therapeutic Results with Concentrated Scarlet Fever Antitoxin, J. A. M. A. 84: 803-805 (March 14) 1925.

6. Dick, G. F., and Dick, Gladys H.: Method for Recognizing Scarlet Fever Streptococci by Means of Specific Toxin Production, J. A. M. A. 84: 802-803 (March 14) 1925.

7. Zingher, Abraham: The Dick Test in Normal Persons and in Acute and Convalescent Scarlet Fever Cases, J. A. M. A. 83: 432-444 (Aug. 9) 1924.

Some skins react to the intradermal injection of sterile salt solution with a papule formation. In order to exclude the papules, and make it possible to add preservative to the skin test solution, without the small reddened areas caused by the preservative being interpreted as positive reactions, the skin test dose was so arranged that an area of reddening less than 1 cm. in all diameters is regarded as a negative reaction. An area of reddening, no matter how faint the color may be, that measures 1 cm. or over in any diameter constitutes a positive reaction, and indicates some degree of susceptibility to scarlet fever.

TYPES OF SKIN REACTIONS

The toxin of scarlet fever causes less inflammation in the skin test than the diphtheria toxin employed in the Schick test. Physicians who are familiar with the Schick test frequently interpret a positive reaction with scarlet fever toxin as negative.

The induration characteristic of positive Schick tests is unusual in skin tests for susceptibility to scarlet fever. Swelling is associated with only the more strongly positive reactions. It is a superficial inflammatory edema of the skin, rather than a subcutaneous induration.

Reactions to scarlet fever toxin are transient. It is necessary to observe them not later than twenty-four hours after the tests are made. In partially immune persons, the reaction frequently begins to fade soon after it appears. At the end of twenty-four hours, it may show a faint dull red, brownish, or slate blue color. If it is entirely faded at the end of twenty-four hours, it is negative. Positive reactions frequently disappear within thirty-six hours.

Reactions that are not modified by an early fading may vary from a faint pink flush to an intense bright red. Some are of a rash type, composed of red points on a white background. The more intensely red reactions may be surrounded by a zone of pallor. Sometimes the lymphatics in the immediate vicinity of the skin test are outlined by pink streaks. Occasionally, there is a rash in the bend of the elbow above the test.

TABLE 1.—*Incidence of Susceptibility to Scarlet Fever as Shown by the Skin Test*

History	Number of cases	Skin Test Negative Per Cent.	Skin Test Positive* Per Cent.
History of an attack of scarlet fever....	204	90.7	9.3
No history of scarlet fever but history of direct or indirect exposure.....	392	42.9	57.1
No history of scarlet fever or of exposure	654	24.6	75.4
Total	1,250	41.2	58.8

* Slightly positive, 7.8 per cent.; positive or strongly positive, 1.5 per cent.

Table 1 shows a higher percentage of positive reactions than occurred in our first series. The greater frequency of susceptibility is probably due to the fact that this group is largely composed of children from the less crowded residential sections of Chicago and its suburbs.

We have observed a series of 158 nurses who showed negative skin reactions before they undertook the care of scarlet fever patients. These nurses with negative skin tests were not protected by active or passive immunization, and they were exposed to the disease for periods of from six weeks to one and one half years. None contracted scarlet fever.

No case of scarlet fever developed in 230 persons with negative skin tests who had direct, but less prolonged, exposure. Throat and nose cultures, made after exposure, showed hemolytic streptococci in sixty-nine of the 230. That none of these persons with hemolytic streptococci in their throats developed scarlet fever may be attributed to their immunity as demonstrated by the skin test, for some of the strains of hemolytic streptococci isolated from them produced the specific toxin of scarlet fever.

In four persons with slightly positive skin reactions, exposure to scarlet fever was followed by sore throat of two or three days' duration. Skin tests made after the attack of sore throat had subsided were negative. In none of these cases was any rash seen, but two of the four desquamated. The other two did not desquamate, although the organism isolated from one produced an exceptionally strong scarlet fever toxin. Such atypical symptoms are particularly apt to follow exposure to scarlet fever in persons with only slightly positive skin tests, or in those who have been incompletely immunized.

Two persons with positive skin reactions and many hemolytic streptococci in their throat cultures were temporarily protected by a prophylactic dose of antitoxin. They contracted scarlet fever on another exposure, one at the end of two months and the other eleven months after the antitoxin was given.

Scarlet fever developed in nine persons who had positive skin reactions and hemolytic streptococci in their throat cultures but did not receive any prophylactic treatment.

Two patients, one sick with acute tonsillitis, the other with ethmoidal sinusitis, had positive skin tests and many hemolytic streptococci in their nose and throat cultures. They had not been exposed to scarlet fever, and did not develop the disease, nor did the skin reaction become negative during the course of the infection in either case. The hemolytic streptococci isolated from these two patients did not produce scarlet fever toxin.

Eleven persons with positive skin reactions whose nose and throat cultures were negative at the time the skin test was made had an attack of scarlet fever from one week to a year later.

Six persons with positive skin reactions who were being immunized with toxin were exposed to scarlet fever and had the disease in a mild form before their immunization was completed.

ACTIVE IMMUNIZATION WITH SCARLET FEVER TOXIN

In preventive immunization, it is necessary to administer enough toxin to immunize without producing harmful reactions. Since the toxin of scarlet fever is less injurious on subcutaneous injection than diphtheria toxin, it is not necessary to add antitoxin or to decrease the toxicity by chemical modification in order to employ it in amounts large enough to immunize.

The addition of antitoxin to the toxin for preventive immunization is undesirable, because it would introduce an unnecessary complication as well as the danger of sensitizing to horse serum.

Zoeller [8] has reported the use in immunization of scarlet fever toxin modified by the addition of formaldehyd. Such chemical modification, resulting in a decreased toxicity or toxoid, is desirable if it can be demonstrated that it accomplishes immunization with fewer doses or in a shorter time.

IMMUNIZING DOSAGE

Preventive immunization with scarlet fever toxin must be carried to the point of a negative skin test in order to protect effectively from the disease.

8. Zoeller, C.: Preparation of Streptococcus Anatoxin, Compt. rend. Soc. de biol. **92**: 244 (Feb. 26) 1925.

If properly graduated doses are given at intervals of from five to seven days, it is possible to immunize all susceptible persons to the point of a negative skin reaction without undesirable results.

The amount of toxin required to immunize different persons varies greatly. Up to a certain point, the percentage of persons completely immunized bears a direct relation to the amount of toxin administered. We have gradually increased the immunizing dosage, as we learned that it is safe and necessary.

The New York City Health Department has employed scarlet fever toxin in preventive immunization on a large scale, but has given it in doses too small completely to immunize the majority of susceptible persons. Zingher [7] reported the use of 100, 250 and 500 skin test doses, a total of 850 skin test doses. Toxin put up in this inadequate dosage has been widely distributed by commercial firms.

The largest total amount of toxin that we have given any one person is 33,000 skin test doses of a phenolized preparation. The largest single dose we have yet employed is 10,000 skin test doses of the phenolized toxin.

Table 2 shows the importance of an adequate dosage.

TABLE 2.—*Direct Relation Between the Amount of Toxin Administered and the Immunity Obtained*

Total Amount of Toxin Administered, Expressed in Skin Test Doses	Completely Immunized: Skin Test Negative Per Cent.	Not Completely Immunized: Skin Test Positive Per Cent.
From 100 to 1,000	0.	100.0
From 1,000 to 2,000	14.3	83.7
From 2,000 to 3,000	21.7	78.3
From 3,000 to 4,000	41.9	58.1
From 4,000 to 5,000	45.7	54.3
From 5,000 to 6,000	66.0	34.0
From 6,000 to 7,000	59.6	40.4
From 7,000 to 8,000	57.1	42.9
From 8,000 to 9,000	55.3	44.7
From 9,000 to 10,000	72.7	27.3
From 10,000 to 12,500	91.8	8.2

There is some discrepancy between the results of retests with preserved and unpreserved toxin following immunization with the preserved toxin. Skin tests with unpreserved toxin and toxin to which 0.5 per cent. phenol was added before dilution give practically the same results before immunization, or after immunization with the unpreserved toxin. But after immunization with the phenolized toxin, the skin test with unpreserved toxin may be definitely positive, while the test with phenolized toxin is entirely negative. In one group of susceptible persons who received from 10,000 to 12,500 skin test doses of phenolized toxin during the course of immunization, seventy, or 94 per cent., showed negative reactions on retesting with the phenolized skin test solution, but seven, or 9.5 per cent. of the persons immune to the phenolized toxin, gave positive reactions when tested with unpreserved toxin.

The size of the first immunizing dose is important. It should be small enough to avoid severe reactions, yet sufficiently large to stimulate the production of antitoxin, so that a larger amount of toxin may be given for the second dose. No dose should be out of proportion to the one that preceded it. A first dose of 500 skin test doses and a second of 1,500 skin test doses, and considerably larger third doses have been employed in the series reported here without any undesirable reactions.

REACTIONS TO IMMUNIZING DOSES

We have not observed any bad effects from immunizing doses. No necrosis, sloughs or secondary infections have occurred; nor have we observed any harmful effect on the heart, kidneys or other organs.

The reactions that occur are either local or general. There is nearly always some local reaction at the site of the injection. It consists of swelling and reddening, which appear within a few hours and begin to subside in from eighteen to forty-eight hours. The intensity of the local reaction varies with the susceptibility of the person. There may be some desquamation over the area of skin involved.

General reactions, if they occur at all, seldom follow any but the first dose. They are comparatively uncommon with the dosage mentioned. They usually consist of some general malaise. Light and transient scarlatinal rashes may follow the first dose in highly susceptible persons. Lowering the dosage does not completely eliminate the possibility of a rash. Nausea of a few hours' duration is still less frequent than the rashes. The most marked general reactions have subsided in forty-eight hours, without leaving any after-effects. Persons who have a general reaction following the first dose do not usually have any general reactions to subsequent doses. None of the reactions are so severe as those that occur during the course of immunization to either typhoid or diphtheria.

If improperly graduated doses of toxin are employed, general reactions may follow any doses that are disproportionately large.

TIME REQUIRED FOR DEVELOPMENT OF IMMUNITY

The passive immunity conferred by prophylactic doses of scarlet fever antitoxin is immediate, but transient. It lasts from four to eight weeks.

The active immunity produced by injections of graduated doses of scarlet fever toxin is acquired less promptly, but is more permanent.

Retests after immunizing doses of scarlet fever toxin, made at intervals of from three days to one year, in a series of 1,634 susceptible persons have shown that immunity develops within one or two weeks.

Retests have been made at intervals of one month, two months, six months and one year in persons who had been incompletely immunized with scarlet fever toxin, so that two weeks after the last dose their skin reactions were modified but not negative. In none did the partial immunity progress to complete immunity.

RESULTS WITH ACTIVE IMMUNIZATION

Before they were assigned to the care of scarlet fever patients, 206 susceptible nurses were immunized to the point of a negative skin reaction. Their exposure was of the same type and duration as that encountered by the nurses who had spontaneously negative skin reactions. None of these 206 nurses, whose skin tests had been rendered negative by active immunization, contracted scarlet fever.

In another series of 405 susceptible persons completely immunized with scarlet fever toxin, there have been no cases of scarlet fever. The exposure of these 405 persons was direct, but less protracted than that of the nurses, and many would doubtless have escaped infection without any preventive measures.

DURATION OF ACTIVE IMMUNITY

Groups of persons with positive skin reactions were immunized to the point of completely negative reactions,

and retested at intervals of three months, six months, one year and one and one-half years. In each case the retests were negative.

CONCLUSIONS

The results reported show the practical value of scarlet fever toxin used in skin tests for susceptibility and active immunization for the prevention of scarlet fever.

It has been demonstrated that the toxin may be administered with safety in doses large enough to confer complete immunity.

Active immunity is developed within two weeks, and it lasts at least a year and a half.

TETRA-ETHYL LEAD

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A new problem of public health and of industrial hygiene has suddenly arisen in this country as a result of the addition of tetra-ethyl lead to motor car gasoline. This procedure was adopted about two years ago, but it did not come to the knowledge of the general public until last fall, when a number of men were poisoned in a New Jersey plant and five died. The distressing details of these cases of insanity and death and the unknown nature of the new poison aroused much excitement and alarm, and induced the public health officials of New York City and of the states of New York and New Jersey to forbid the use of "ethyl gasoline" on the ground of danger to the public from poison contained in exhaust gases of motor engines burning such gasoline.[1] This prohibition has recently been rescinded in the two states, but is still in force in New York City.

Public excitement soon subsided, but a large and continually growing body of mechanics now organized in the Unions of Automobile and Aircraft Mechanics, Teamsters and Chauffeurs became increasingly concerned over the possible danger to them, working as they do in an atmosphere of exhaust gases, and, finding a dearth of authoritative information on this phase of the matter, they applied to the Workers' Health Bureau for advice. The present report was compiled from the available data at the request of the Workers' Health Bureau and with the assistance of the bureau.

Tetra-ethyl lead is added to gasoline to eliminate the "knock" or detonation in internal combustion engines. A halogen "carrier," either ethylene dibromid or trichlorethylene, is added, and during combustion decomposition occurs, with the formation of lead chlorid or lead bromid, together with lead sulphate from the sulphur in the gasoline and also small amounts of lead oxid and metallic lead. The problem, therefore, concerns two distinct dangers: that of tetra-ethyl lead itself, and that of the lead products resulting from its combustion.

TOXICITY OF TETRA-ETHYL LEAD

Harnack,[2] in 1878, tested the toxicity of triethyl lead and its acetate on frogs, rabbits, cats and dogs. Years after, in 1921, Mason[3] of Cincinnati confirmed many of Harnack's findings, using various salts of triethyl and trimethyl lead. The most important features of these experiments are: a stimulating action on the central nervous system, mainly the medulla and higher centers; a marked stimulation of the central motor nerve mechanism, evidenced by trembling, twitching and, finally, convulsions, but without loss of consciousness; an extreme fall of blood pressure, apparently central in origin, for it fails in pithed animals; changes in the respiration, which at first is stopped, and then accelerated and deepened; slowing of the pulse, and increased peristalsis with colic and diarrhea.

The symptoms set up by tetra-ethyl lead, in animals and in human beings, bear a striking resemblance to this description, as can be seen in the report of a study of the latter recently completed by Eldridge[4] of the Chemical Warfare Service. From these experiments it is also evident that tetra-ethyl lead can be absorbed through the skin and through the respiratory tract, and that there is a cumulative effect when repeated sublethal doses are administered.

Briefly summarized, Eldridge's findings are as follows: Experiments on six dogs showed that application of tetra-ethyl lead to the shaved skin of the abdomen resulted in a direct action on the intestinal tract, characterized by acute lead colic, followed by diarrhea, the abdomen tense and painful to pressure, then depression, difficulty in getting up on the legs, tremors, coma, convulsions and death. The lethal point for dogs by skin absorption was found to be 0.3 c.c. per kilogram of body weight.[5] Death followed in four dogs after from twenty-four to 180 hours, two recovering. In eleven guinea-pigs the lethal amount was determined to be 0.6 c.c. per kilogram of weight, and death came on in from twelve to sixty hours. Three of this group recovered. The symptoms were similar to those in dogs.

Inhalation experiments were made on mice, five animals being used for each of ten concentrations of tetra-ethyl lead. The exposure lasted ten minutes, and during this time the mice showed activity, followed, after removal from the test chamber, by marked excitement, then depression, collapse, trembling, convulsions and death. The lethal dose overaged 5.11 mg. per liter of air.

To determine possible cumulative effects, a 4.08 kg. dog was chosen, and applications of 0.1 c.c. were made to his skin once a day. After the twelfth application the dog became depressed and nervous, and increasingly so until the eighteenth, when he became unsteady on his feet and trembled. He died forty minutes after the twenty-first application. The cumulative action was also tested on mice, by inhalation experiments, exposing ten of them to 0.5 mg. per liter of air for ten minutes a day. Five died, on the fourteenth to the twentieth days.

Necropsies on the dogs dying with acute poisoning showed an acute inflammation of the small and large intestines, with numerous ulcers from 1 to 1.5 cm. in diameter, clean and punched out, with a smooth base. These were chiefly in the region of Peyer's patches, which were swollen and prominent. One animal had a similar ulcer near the pyloric end of the stomach; one had no lesion in the intestinal tract at all. There was no change in the heart, lungs, liver or spleen, but a mild congestion in all zones of the kidney. Analyses were

1. An editorial in THE JOURNAL, Nov. 8, 1924, p. 1511, called attention to tetra-ethyl lead as "another industrial hazard," and after commenting briefly on a number of fatalities among the producers of this substance spoke also of the possibility of poisoning from the exhaust gases of motors, particularly as lead is a cumulative poison.
2. Harnack: Arch. f. exper. Path. u. Pharmakol. **9**: 152, 1878.
3. Mason, E. C.: The Pharmacologic Action of Lead in Organic Combination, J. Lab. & Clin. Med. **6**: 427 (May) 1921.
4. Eldridge, W. A.: A Study of the Toxicity of Lead Tetra Ethyl, Report 29, Chemical Warfare Service, Oct. 5, 1924.
5. Or 0.498 gm. per kilogram of weight. One cubic centimeter of pure tetra-ethyl lead weighs 1.659 gm.

made of excretions, organs and bones of dogs and guinea-pigs, and lead was found in both urine and feces, in skeleton, intestines, liver and lungs, by far the largest amount being in the skeleton.[6] Eldridge comments as follows:

> We are dealing with a highly lipoid-soluble lead compound, which is capable of skin penetration and which, furthermore, is comparatively stable. It is probably the only compound which, absorbed through the skin, causes acute lead poisoning.

As a preventive, washing with various substances was tried. Although common soap and olive oil were both found to work well, the best agent was kerosene, followed by tincture of green soap. Animals so treated survived even if thirty minutes elapsed before washing the skin.

This is Eldridge's summary:

> It is quite evident from these observations that the manufacture, handling and distribution of lead tetra-ethyl involves considerable danger to operatives, of acute lead poisoning in those instances where considerable material is splashed upon the skin, and of chronic lead poisoning from the absorption of small amounts by inhalation, by the skin or by the mouth.

THE PRESENT-DAY PROBLEM

There are four questions that must be answered before we know whether the manufacture and distribution of tetra-ethyl lead and its use in gasoline carry with them a danger serious enough to warrant prohibition by public health authorities.

1. The danger to men engaged in the manufacture of tetra-ethyl lead.

2. The danger to men handling ethyl fluid. This is a mixture of tetra-ethyl lead and ethylene dibromid or trichlorethylene, with the addition of a small quantity of dark colored dye. Ethyl fluid is handled by employees in the production plant and by distributing and filling station employees, who mix it with gasoline.

3. The danger to men handling ethyl gasoline. This is ordinary gasoline to which a small amount of ethyl fluid has been added, about one-half teaspoonful to the gallon.

4. The danger to the public from breathing the exhaust gases from engines using ethyl gasoline, and the danger to garage workers, chauffeurs or other persons who work on engines, exhausts or mufflers of motors burning ethyl gasoline.

1. *The Danger to Men Manufacturing Tetra-Ethyl Lead.*—Within the last seventeen months, eleven men have died and one man has become insane through tetra-ethyl lead poisoning. All were engaged in the manufacture of this compound. These accidents occurred as follows:

Sept. 21, 1923, one death, E. I. du Pont de Nemours & Co., Carney's Point, N. J.

June 1, 1924, two deaths, General Motors Research Corporation, Dayton, Ohio.

July 14, 1924, one death, E. I. du Pont de Nemours & Co., Carney's Point, N. J.

Oct. 20, 1924, one death, E. I. du Pont de Nemours & Co., Carney's Point, N. J.

Oct. 28-30, 1924, five deaths, Standard Oil Company, Bayway, N. J.

Feb. 18, 1925, one death, E. I. du Pont de Nemours & Co., Carney's Point, N. J.

Feb. 18, 1925, one insane, Standard Oil Company, Bayway, N. J.

Eldridge's paper contains a summary of the symptoms in the Standard Oil cases, as reported to the company by W. Gilman Thompson and A. W. Schoenleber, May 16, 1924. The first symptom noticed is a marked fall in blood pressure, sometimes 60 mm. of mercury below normal, an accompanying fall in body temperature, which has been as low as 94.6 F., and a low pulse rate, down to 48 a minute. Then symptoms of profound cerebral involvement appear, persistent insomnia, extraordinary restlessness and talkativeness, and delusions. The gait is like that of a drunken man, but there are no paralyses or convulsions. Finally, after a period of exaggerated movements of all the muscles of the body, with sweating, the patient becomes violently maniacal, shouting, leaping from the bed, smashing furniture, and acting as if in delirium tremens; morphin only accentuates the symptoms. The patient may finally die in exhaustion. In two fatal cases, the body temperature rose to 110 F. just before death occurred. One of these was a young man of fine physique who had been at work only five weeks. He is said to have suffered terrible agony. "He died yelling."

There is no cyanosis or dyspnea; there may be vertigo, and the acute outbreak may be preceded by a period of anorexia, vomiting and diarrhea. Changes in the red blood corpuscles are marked, and the blood of one of the men who died failed entirely to coagulate. It had the color typical of carbon monoxid hemoglobin. In one case the systolic blood pressure dropped from 190 to 112 mm. of mercury in three and a half hours, a fall commensurate with that following a severe hemorrhage. Convalescence is slow, and may take from six to ten weeks.

From the du Pont de Nemours Company's physicians, Eldridge secured a report of the symptoms in twenty-eight cases of tetra-ethyl lead poisoning. The most frequent finding recorded is insomnia (twenty-eight times); then follows a markedly lowered blood pressure (twenty); a subnormal temperature (nineteen); anorexia, nausea and hyperacidity of the urine (eighteen); bodily weakness (sixteen); abdominal cramps (twelve); unaccustomed and annoying dreams (eleven); vertigo and morning vomiting (ten); decided loss of weight (nine), and a slow pulse, increased muscular reactions and headache (seven). Other less frequent findings were a metallic taste in the mouth, tremors, a lead line on the gums (in four cases), and itching of the skin. Lead was detected on the skin of twelve men.

The accidents in New Jersey and Ohio were followed by investigations on the part of the state officials, to determine the extent of the danger in tetra-ethyl lead production and the possibility of protecting workmen against it.

The conditions in Ohio were inspected by H. Ehret of the Factory Inspection Department, and Dr. Nelson C. Dysart. They found that at the time the two fatal accidents occurred, unskilled laborers were employed without skilled supervision, the arrangements for handling the product were crude, the mixing and bottling were carried on under an ordinary laboratory hood, and although the men were given gloves and respirators, they had discarded them. At the time of their visit, however, an excellent building and equipment had been provided as well as working clothes, washing facilities, etc., for the men. "Since the installation of the new filling and blending arrangement with the downward exhaust, no symptoms have been experienced by the workmen, whereas previously complaint of sleepless-

6. The distribution in one dog was: bone, 200 mg.; intestines 96 mg.; liver, 76 mg.; lungs, 16 mg.; no other organ had so much as 10 mg.

ness, headache, loss of weight and appetite were quite common."

Dr. Andrew McBride, commissioner of labor of the state of New Jersey, made an investigation of the Standard Oil plant and published (Nov. 25, 1924) a report in which he stated that he was opposed "to any attempt to again produce this material by the same processing methods that were used in the past, as experience has demonstrated that workmen cannot be safeguarded against the effects of poisonous contacts." After the first death at Bayway, the other employees who had been exposed to tetra-ethyl lead were taken to the Reconstruction Hospital for observation. Four died a few days later, several exhibited transient symptoms of mental disorder, and one was declared insane, Feb. 18, 1925. The Standard Oil plant was closed after the deaths of the four men in the hospital.

The E. I. du Pont de Nemours & Co. plant at Carney's Point, N. J., where two deaths had previously occurred, was also investigated by Dr. McBride. His report stated that "the danger of exposure was reduced to a minimum," but nevertheless, on Feb. 18, 1925, a man employed in this plant died from exposure to tetra-ethyl lead.

2. *The Danger to Men Handling Ethyl Fluid.*—Ethyl fluid is sold in one quart steel receptacles with pointed necks, sealed with soft tin caps. The service station operator who is to add ethyl fluid to the gasoline in automobile tanks breaks the seal over an upright spike as he places the receptacle over the cup of the delivery tube of the gasoline tank. When the receptacle is empty, he takes it off and substitutes another. There is a recognized danger involved in this process, for the liquid may be splashed over the face and hands of the worker as he jams the receptacle over the opening spike. In view of this fact the manufacturers have stated that in future, sales of tetra-ethyl lead will be made only to refineries, where it will be mixed with gasoline by specially trained employees and then distributed to service stations.[7] This provision, however, is purely voluntary on the part of the manufacturers, and in no state is it a regulation with the force of a law behind it. It is said that small stations which have only one pump cannot buy ready mixed ethyl gasoline, but must add the ethyl fluid to ordinary gasoline on demand.

3. *The Danger to Filling and Distributing Station Employees and to the Public from Handling Ethyl Gasoline.*—A study covering this problem is being conducted at present by the Laboratory of Industrial Hygiene of the Columbia University College of Physicians and Surgeons, New York, and as yet the data collected are insufficient for the formation of a definite statement.

4. *The Danger to Garage Employees and to the Public from Exhaust Gases from Engines Using Ethyl Gasoline.*—The exhaust gases generated by the combustion of ethyl gasoline contain lead compounds in the form of more or less fine dust. The danger here would be from repeated small doses resulting in chronic lead poisoning. The importance of this problem was realized by the General Motors Research Corporation (later the General Motors Chemical Company), and the corporation requested the United States Bureau of Mines to investigate the question. Pending the results of this investigation, the manufacture, distribution and sale of tetra-ethyl lead and of ethyl gasoline were not suspended, but were allowed to continue. The Bureau of Mines began experiments in December, 1923, and just one year later made public a report on Exhaust Gases from Engines Using Ethyl Gasoline. The fact that the report was issued by a government agency gave it an authority and an air of finality, as shown by the fact that immediately after its publication the ban on the manufacture, distribution and sale of ethyl gasoline was lifted by the states of New York[8] and New Jersey, and also by recent articles from the pens of two public officials.[9]

REPORT OF THE BUREAU OF MINES

The experimenters used ordinary motor gasoline, to which was added 3 c.c. of tetra-ethyl lead and 2 c.c. of ethyl dibromid or trichlorethylene, approximately 0.04 and 0.06 per cent., respectively, by volume. The apparatus used was a 1,000 cubic foot air chamber through which air was driven at the rate of 30,000 cubic feet an hour, making a complete change every two minutes. The exhaust gases were generated by a Delco engine and were delivered during the first period through 10 feet of a 1¼ inch pipe; but since a great deal of the lead was deposited in this pipe, a change in the apparatus was made, April 5, and after that the gas was sent in by a 30 inch straight section of pipe and a muffler extending directly from the engine and discharging into the chamber, while the gases were removed by a similar pipe ending near the floor level on the same side of the chamber. As a result, the quantity of lead delivered was increased from 0.5 gm. daily to 1.5 gm. The amount of lead was regulated by the carbon monoxid content of the gas, which was always kept down to the "allowable" limit of 0.4 per thousand, established by Yandell Henderson and his colleagues as the highest permissible for the air in the New York-New Jersey vehicular tunnel.

The animals were placed in cages in the air chamber for three and for six hours daily for varying periods. Twenty-three rabbits, fifteen guinea-pigs, four pigeons, eight dogs and two monkeys were used for the three hour tests; an equal number of rabbits and guinea-pigs, three dogs and four pigeons were given six hour exposures, and at least half as many rabbits, guinea-pigs and pigeons were kept as controls. All were quartered together and given the same amount and kind of food at the same time.

After each running period the deposits in engine hood, exhaust pipe, drip pans and crank case were examined for lead, and it was found that about 63 per cent. of the lead in the gasoline was in these deposits, in the form of sulphate and chlorid or bromid, while the remainder was discharged into the air of the chamber, the larger particles falling to the floor, the lighter remaining suspended in the air. The carbon monoxid content of this air during the second period of the experiment averaged from 0.015 to 0.025 per cent., and the lead, from 0.002 to 0.007 mg. per cubic foot.

Of the animals, 50 per cent. of the rabbits, test and controls, died, and about 25 per cent. of the exposed guinea-pigs; nine of the ten dogs survived, and also the two monkeys and the pigeons. All deaths are attributed to accident or disease, mostly of an infectious nature. No loss of weight was noted, no anemia, no lead lines, no evidence of lead poisoning either

7. Shrader, J. H.: Tetra-Ethyl Lead and the Public Health, Am. J. Pub. Health **15**: 213, 1925.

8. At Albany, Jan. 20, 1925, on the advice of the Public Health Council of New York State.

9. Shrader (Footnote 7). Salls, C. M.: The Nation's Health, New York State Dept. of Labor **7**: 169 (March 15) 1925.

through symptoms or from analysis of tissues. Examination of the blood of six three-hour rabbits, four six-hour rabbits and two dogs showed no stippling of the red cells, only a slight polychromatophilia, anosicytosis and poikilocytosis. The blood of the guinea-pigs showed stippling, but no more in the test animals than in the controls.

The carcasses of seven guinea-pigs, one dog and eleven rabbits were examined for lead by Fairhall's [10] method, and very insignificant amounts were found, the largest being 0.33 mg. per hundred grams of body weight. Lead was found in controls as well as in test animals. The authors conclude that this shows that latent or delayed poisoning is not a possibility under these circumstances, since no storage of lead took place.

To estimate the danger from the quantity of lead found in the exhaust gases, an experiment in inhalation and exhalation was made. Six men breathed these gases through a specially designed mask with double acting valves which collected the exhaled air. It was found that of the lead inhaled, only from 8 to 27 per cent. was retained, an average of 15 per cent. From this the authors reason that the quantities of lead found in the air of the test chamber are negligible and that "the only danger of lead poisoning from products of combustion of ethyl gasoline seems to be confined possibly to the mechanic who is continually cleaning carbon from motors." This risk they believe to be no greater than that incurred by painters.

CRITICAL REVIEW OF THE REPORT BY DRINKER AND EDSALL

A review of this report by Drinker and Edsall [11] of Harvard has appeared. These reviewers believe that the report loses a truly convincing character because of the small number of animals that actually went through the test. The mortality of both test and control animals was excessive (50 per cent. of rabbits, 25 per cent. of the guinea-pigs), and this lessens the value of the experiments. All these deaths are taken as due to infections or accidents of various sorts, and are said to have been as frequent in control animals as in experimental; but "it is unfortunate that better experimental stock was not available for experiments of this degree of importance." They question the adequacy of the data on which the authors base their assertion that a man breathing the exhaust from an engine retains only 15 per cent. of the lead inhaled, and they are unwilling to apply these results to animals without direct experiments on the species in question. The material is, in their view, presented in too insufficient detail. No data are given as to the size, composition or settling of lead in the air delivered to the test chamber, the lead being assumed to be in the form of particulate matter, not a gas. It seems to them an unwarranted assertion that such particles would pass out of the air of a garage in the same manner as would the exhaust gases from gasoline engines. For this reason and because the amount of lead was kept extraordinarily low in the air of the test chamber, it cannot be assumed that these conditions imitated the actual circumstances under which the public must meet the combustion products of ethyl gasoline. What the experiments do show is that "with a ventilation system which prevents the atmospheric lead delivered to the air by engines using ethyl gasoline from attaining more than 0.002 to 0.007 mg. of lead per cubic foot, a condition results which, in a limited number of animals, has been demonstrated to be safe."

To these criticisms we would add the following:

CHANGE IN METHOD OF CONDUCTING EXPERIMENT AT END OF FIRST FOUR MONTHS

From the start of the experiment, Dec. 6, 1923, to April 2, 1924, which covers one half of the time of the reported study, the air delivered into the experimental chamber contained an average of only 0.00043 mg. of lead per cubic foot (tests for lead averaged up to April 2), but for the last four months of the experiment the lead in the air was increased to 0.0045 mg. per cubic foot (tests for lead averaged from April 2 to July 22). Moreover, the ventilating system used during the first four months of study appeared to the investigators to be unsatisfactory, and on April 23 a change was made. Under the new system the exhaust gases were conveyed to the chamber through a 10-inch pipe and removed from the chamber by means of a similar pipe opening near the floor level on the same side of the chamber. Such an arrangement might well produce a short-circuiting of the air which would interfere seriously with the general ventilation of the chamber.

Since two entirely different methods of ventilating the experimental chamber were used, it would appear that the first four months of the experiment were of little value and that the results from the two methods should not be added together or averaged together.

LENGTH OF EXPOSURE OF ANIMALS

A cursory reading of the report conveys the impression that some ninety-seven animals were exposed to the fumes from ethyl gasoline engines for a period lasting from December 6 to July 22, but a more careful study shows that, owing largely to the mortality among the animals, the actual period of exposure was much shorter. Blood pictures are given for only twelve of the test animals, and of these, nine were exposed for three months or less; viz., eight for three months, one for two months, and three for five and a half months. Reports on tissues analyzed for lead are given in only nineteen of ninety-seven exposed animals, and more than half of these (ten out of nineteen) were exposed to ethyl gasoline for only three months or less. Six animals were exposed for three weeks or less; four for from three weeks to three months; six for from three to five months, and three for more than five months.

CONTROL ANIMALS WERE NOT EXPOSED TO CARBON MONOXID

The animals in the experiment chamber were exposed to two poisons, carbon monoxid, and lead, the controls to neither. Since it has been established by Nasmith and Graham [12] that exposure to small doses of carbon monoxid for successive days produces in experimental animals an increased red blood cell count, some doubt must be cast on the records of blood counts in the test animals. The tables show that there was no decrease in erythrocytes in the test animals, and the conclusion is drawn that these animals showed no lead anemia. To prove this point, the effect of repeated exposures to carbon monoxid would have to be tested on control animals. As a matter of fact, direct examination of smears did show some polychromatophilia, anisocytosis and poikilocytosis, all evidences of secondary anemia.

10. Fairhall, L. T.: The Estimation of Minute Amounts of Lead in Biological Material, J. Indust. Hyg. 4: 20 (May) 1922.
11. Drinker, C. K., and Edsall, D. L.: J. Indust. Hyg. 7: 94 (Feb.) 1925.
12. Nasmith, G. G., and Graham, D. A. L.: Hematology of Carbon Monoxid Poisoning, J. Physiol. 7: 35, 1906.

CONTROL AND TEST ANIMALS WERE QUARTERED TOGETHER

The Bureau of Mines report states that "all animals were quartered together and given the same amount and kind of food at the same feeding time." This procedure is open to criticism, since the excretions of animals exposed to lead would affect the control animals, and this may account for the fact that lead was found in the tissues of the control animals, for normal tissues should show no lead. For the same reason, the three-hour animals should not have been quartered with the six-hour animals.

CHARACTER OF DIET NOT STATED

No statement is made regarding the food given the animals, and yet diet and exposure to sunlight have a direct influence on the fate of ingested lead and may determine whether it shall be stored in temporary harmlessness or circulated or excreted. If animals exposed to lead are put on a high calcium diet (milk) and placed in direct sunlight, they can accumulate large amounts of lead and show neither signs nor symptoms of lead poisoning.

ANALYSIS OF EXCRETIONS

No analyses of excretions were made, and yet examination of stools for lead gives important evidence as to the amount of lead passing through the body. It would also have been important to know in which tissues the lead was found in the animals that were killed. This would have shown whether the lead was being stored in comparative safety in the skeleton or whether it was actually in circulation.

INTERPRETATION OF SYMPTOMS IN ANIMALS

There is some confusion in the report with regard to the condition of the experimental animals. In the protocols, we find that one animal was emaciated before death and that one dog and one rabbit were paralyzed before death, but in the summary the statement is made that none of the animals lost weight or were paralyzed. This discrepancy between observations and conclusions is not explained. It is reported that none of the animals had colic, but colic is difficult to determine in animals and its absence can only be surmised.

The statement is made with regard to a dog that was killed after paralysis had set in that "no stippling or lead line was found." Dogs poisoned by lead probably do not show stippled red cells.[13] The comment, "no lead line," was made in regard to rabbits which died, but in rabbits lead poisoning is not accompanied by the formation of a lead line, which occurs in few animals, notably in cats, never in rabbits. Whether dogs poisoned with lead show a lead line is as yet not known. The cause of paralysis and emaciation in the experimental animals is not sufficiently explained, and with regard to the monkeys very few facts are given, no records of weight, blood findings, lead line or analysis of stool or urine.

QUANTITY OF EXHAUST GAS IN TEST ROOM NOT TYPICAL OF ACTUAL CONDITIONS

The animals under test were kept in an atmosphere containing exhaust gases up to a concentration of 4 parts of carbon monoxid in 10,000. This limit was set because it is the amount of carbon monoxid set by Yandell Henderson and his associates as the highest limit to be allowed in the air in the New York-New Jersey vehicular tunnel. The investigators refer repeatedly to this standard as the "permissible" or "allowable" amount of carbon monoxid. In a personal communication, Henderson makes this comment:

> It is indeed the highest amount that should, on grounds of healthfulness, exist at any time in a garage; but there is ample evidence in our investigations and, particularly, also, in the recent report by Dr. Ettore Ciampolini of the New York Department of Labor, in his study of public garages, to show that the atmosphere in such places is often contaminated to a far greater extent than the 4 to 10,000. At present with the form of exhaust used on most automobiles it is quite impossible to keep the air of garages to a healthful standard in regard to carbon monoxid. For the same reason, garage workers, even on the basis of the Bureau of Mines report, will be exposed to several times as much lead dust as were the animals reported in those experiments. Moreover, in the test room the rapid artificial ventilation prevented the lead from accumulating as dust as it does in a garage or on the streets. It would have been a nearer approach to real conditions if the exhaust gas had been blown through the chamber for several weeks without putting any animals into the chamber. Then, when an amount of dust had collected corresponding to that which occurs in a garage, the exhaust could have been shut off, and the animals could then have been made to live in this dusty room for a few weeks. An experiment of that sort would have approximated real conditions in a garage.

NEGATIVE RESULTS AS TO LEAD POISONING

The period of exposure of the animals was too short and the method used was not such as to produce convincing results. It is notoriously difficult to bring about lead poisoning in animals by the respiratory route unless an extraordinary measure is used, such as insufflation of lead dust, because the upper respiratory tract in these animals is very well protected. Such experiments can hardly be accepted as solving the problem for human beings.

The conclusion drawn in the report that "the only danger of lead poisoning from products of combustion from ethyl gasoline seems to be confined possibly to the mechanic who is continually cleaning carbon from motors" is apparently based on the large proportion of lead which was deposited in the engine pipe, etc., and on the inhalation experiments, which showed that only 15 per cent. of the inhaled lead remains within the body.

CONCLUSIONS

We believe that these conclusions are not warranted and that the evidence so far available seems to show a real danger of chronic lead poisoning connected with garage work when ethyl gasoline is used and a possible danger to the public from lead dust in the streets of large cities. The compounds of lead formed by the combustion of ethyl gasoline are the chlorid or bromid, according to the carrier used, and the sulphate. A quantitative analysis made by the Bureau of Mines' investigators of the deposits in engine head, exhaust pipe, crank case, and drip pan under the exhaust outlet, showed that 95.2 per cent. of the deposit consisted of lead, of which 40.1 per cent. was in the form of chlorid or bromid, and 55.1 per cent. in the form of sulphate (p. 9). Now, the chlorid and bromid of lead are among the most soluble of the lead salts, far more

Solubility in Grams per Liter of Water

Lead, basic carbonate (white lead)	0.0016
Lead oxids (red lead, litharge, etc.)	0.02
Lead sulphate	0.041
Lead bromid	8.3
Lead chlorid	9.6

13. Aub, J. C.; Reznikoff, Paul; and Smith, D. E.: Lead Studies, III, The Effect of Lead on Red Blood Cells, J. Exper. Med. **40**: 151 (Aug.) 1924.

soluble in water than are those usually encountered in industry, as can be seen by the accompanying table.[14]

The statement, therefore, that only 15 per cent. of the inhaled lead is retained is not entirely reassuring, even if one accepts it as proved. A finely divided soluble lead compound can be readily absorbed from the respiratory tract, beginning with the nasal mucosa,[15] and may constitute a serious danger if administered in repeated doses, even if these are small.

It seems to us that the investigators have devoted their attention to the fine particles of lead suspended in the air and have not attributed enough importance to the discharge of "large particles of scale which fall to the ground," and which, in garages, in taxi stands under cover in the large railway stations, and even on the crowded streets of cities, might constitute a far from negligible danger. These particles will be ground fine by passing feet and swept up by currents of air, and when dissolved by rain and washed away, it is certainly possible that they may contaminate surface waters. It is also well to remember that when tetra-ethyl lead was first used in motor gasoline, all the lead was deposited in the engine, and it was for this reason that a halogen carrier was added, in order to get some of the lead out of the engine. Later improvements will probably result in further progress in this direction and an increase in the amount of lead discharged into the air.

SUMMARY

Tetra-ethyl lead is added to gasoline together with a volatile "carrier," ethylene dibromid or trichlorethylene, to prevent "knocking" in motor engines.

Experiments carried on by Eldridge of the Chemical Warfare Service show that tetra-ethyl lead passes readily through the skin and that rapid acute poisoning may follow skin application or the inhalation of fumes. In animals so poisoned, the lead is found deposited chiefly in the skeleton. A cumulative effect also was noted, when animals were given repeated small doses by these two routes, death occurring in more than half.

The production of tetra-ethyl lead for commercial purposes resulted in the poisoning of some sixty or seventy men and the death of ten men, in a period of thirteen months, ending Nov. 1, 1924. Since then great improvements in equipment have been made, and only two serious cases of poisoning have been reported during 1925. One man died, and one was declared insane in February, 1925.

The mixing of ethyl fluid with gasoline constitutes a danger, the extent of which is as yet undetermined, to employees of refineries and service station employees.

The use of gasoline to which ethyl fluid has been added constitutes a probable risk to garage workers and a possible risk to the public, of chronic lead poisoning, because the combustion of tetra-ethyl gasoline results in the formation of soluble compounds of lead, the chlorid and bromid (as well as the less soluble sulphate), which compounds pass out with the exhaust gases in the form of light and heavy particles.

The states of New York and New Jersey prohibited for a time the use of ethyl gasoline, but rescinded this order when a report was issued by the United States Bureau of Mines declaring that tests made on animals with exhaust gases from engines using ethyl gasoline had shown no evidence of plumbism in any of these animals.

This report of the Bureau of Mines has been critically examined and found to be inadequate in scope, in technic, and in conclusiveness. It cannot be accepted as the final word on the question as to the toxicity of exhaust gases from cars using ethyl gasoline. The further question, of the risk to garage workers, is only lightly touched on in this report, and it also must await a more thorough handling.

Because of the enormous and increasing use of automobiles, the question of the danger to industrial workers and to the public which is involved in the production and handling of tetra-ethyl lead and the use of ethyl gasoline is of the highest importance and calls for a study which will be beyond criticism. Such an investigation must include an intensive survey of a selected group of individuals who have already been exposed to the gas, under known and varying calcium diet and varying exposure to sunlight. Their excreta should be analyzed for lead. Only in this way can absorption of lead and possible lead poisoning be ruled out. Perhaps of even greater significance is the possibility that the gonads may be injured and posterity be affected,[16] even without any marked effect on the individual. This would necessitate studying the progeny of pedigreed animals. Until investigations of this character have been made, it would seem to be in the interest of public health to suspend the use of tetra-ethyl lead in gasoline.

14. Personal communication to the authors from Prof. Julius Stieglitz, Department of Chemistry, University of Chicago.

15. Blumgart, H. L.: The Absorption of Lead from the Nasal Mucosa, J. Indust. Hyg. **5**: 153 (Sept.) 1923.

16. Cole, L. J., and Bachhuber, L. J.: The Effect of Lead on the Germ Cells of the Male Rabbit and Male Fowl as Indicated by Their Progeny, Proc. Soc. Exper. Biol. & Med. **12**: 24, 1914. Weller, C. V.: The Blastothoric Effect of Chronic Lead Poisoning, J. M. Res. **33**: 271, 1915.

PARATHYROID TETANY

REPORT OF A SEVERE CASE TREATED WITH MASSIVE DOSES OF CALCIUM LACTATE *

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Almost since the beginning of thyroid surgery, a postoperative condition of tetany has been noted. This was at first ascribed to thyroid deficiency, but animal experimentation clearly differentiated the process and proved it dependent on parathyroid deficiency, a fact subsequently substantiated clinically in numerous instances.

The condition probably will increase rather than decrease, owing, as one chief of a prominent clinic remarked, "to the necessity of removing more thyroid in order to secure a greater degree of cure." [1]

The treatment of this condition has always been a matter of grave concern. Parathyroid transplantation, desiccated gland orally, extracts of the gland subcutaneously and intravenously, and various salts by mouth, by rectum and intravenously have been tried, but usually without success in the severe cases.

Frouin [2] was one of the first to call attention to the oral efficacy of calcium and magnesium salts in parathyroidectomized dogs. Luckhardt and his co-workers [3]

* From the surgical service of John E. Jennings, the Brooklyn Hospital.

1. Lahey, F. B.: Parathyroid Deficiency and Its Treatment, Boston M. & S. J. **187**: 170 (Aug. 3) 1922.

2. Frouin: Compt. rend. Acad. d. sc. **148**: 1622, 1909.

3. Luckhardt, A. B., and Rosenbloom, R. J.: The Prevention and Control of Parathyroid Tetany, Proc. Soc. Exper. Biol. & Med. **19**: 129, 1921. The Control and Cure of Parathyroid Tetany in Normal and Pregnant Animals, Science **56**: 48, 1922. Luckhardt, A. B., and Blumenstock, J.: The Recurrence of Acute Parathyroid Tetany in Completely Parathyroidectomized Animals During the Oestrus Cycle, Science **56**: 257, 1922.

demonstrated the efficacy of intravenous Ringer's solution in preventing tetany, and also the fact that calcium free solutions were less effective than those containing this element. Dragstedt [4] proved that parathyroidectomized dogs could be kept alive indefinitely, provided a strict carbohydrate diet was adhered to preoperatively and postoperatively, and intestinal stasis prevented. Finally, Luckhardt and Goldberg [5] showed that completely parathyroidectomized dogs could be kept alive without showing tetany, even on a diet rich in meats, by means of the oral administration of calcium lactate approximating 1.5 gm. per kilogram of body weight, and that, if the calcium was withdrawn for even one day, signs of tetany developed, but that the amount could be gradually reduced and after several months entirely eliminated. The ingestion of putrid meats, constipation and the estrual cycle precipitated signs of tetany, but could be relieved by enemas in the former, and by calcium therapy in the latter.

In man, the prognosis has evidently not kept pace with that in animals. Foster [6] contended that "the only hope lies in the successful transplantation of parathyroid tissue." Lahey,[1] mentioning calcium as the most effective treatment, added, "It prolongs life, but in severe tetany death probably eventually results." Clute [7] states that "calcium may be of some benefit, but will not save the patient's life."

REPORT OF CASE

History.—Mrs. F. M., a housewife, aged 19, was first admitted to the hospital, July 12, 1923, with the chief complaint of tumor of one year's duration in the front of the neck. One year before she began to note a slowly progressive swelling of the neck; during the same time, she had the following symptoms with increasing severity: nervousness, palpitation, tremor, ravenous appetite, insomnia, loss of weight, and for three weeks, diarrhea, occasional dizzy spells and disturbances of vision. Pneumonia had followed parturition, four years before. She had winter sore throats, but otherwise was essentially normal. Her husband and two children were living and well. She was still nursing a 2 year old child. Her catamenia began at 13, was regular every twenty-eight days, and usually extended over four days. There had been only one menstrual flow since the last pregnancy. Her mother had a small goiter. There were no familial diseases.

Examination.—The patient was well developed and fairly well nourished. The eyes showed slight exophthalmos and a positive von Graefe's sign. The tonsils were markedly enlarged and infected. The thyroid was markedly enlarged, especially the isthmus and right lobe, where distinct globular masses were felt. There was a distinct bruit. The lower poles were not made out, although no increased retromanubrial dulness was found. The lungs were normal. The heart was enlarged to the left, the point of maximum intensity and the left border dulness coinciding 11.5 cm. to the left of the midsternal line. The sounds were of good quality. The rate was 130. The pulmonic second sound and the aortic second sound were reduplicated. The pulses were full, equal and regular; the rate was 130. The reflexes were slightly hyperactive. A diagnosis of exophthalmic goiter was made.

The electrocardiographic tracing showed simple tachycardia. The urine was negative. The roentgenogram showed a shadow in the upper mediastinum extending a little to the right and to the left of the midline. The trachea seemed somewhat contracted and showed slight deviation to the left at the level of the lower cervical vertebrae. The patient refused to have a metabolism test or to remain in bed, and was discharged against advice.

Treatment and Course.—She was readmitted one week later with signs and symptoms as before. She was placed on a high caloric house diet with bromids and digitalis for one week, after which the basal metabolic rate was 54 + and 51 + (the calories averaged 4,300 daily). The preoperative pulse was from 126 to 92; the blood pressure was 110 systolic and 40 diastolic. The patient's weight was 115 pounds (52.3 kg.). An operation was performed, August 1, under gas and oxygen anesthesia, of fifty minutes' duration. The gland was diffusely enlarged, with extensive overlapping behind the trachea. The entire thyroid was removed except a portion 2 cm. in diameter at the right lower pole, and a flat layer about 0.5 by 2 by 3 cm. over the trachea. There was profuse hemorrhage. The capsule was very vascular. The pathologic report showed macroscopically two separate pieces of thyroid tissue weighing together 175 gm., with the surface coarsely lobulated. Microscopically, the gland was uniform throughout and was in an active vegative state. The alveoli were close set, empty of colloid, and composed of large cuboidal cells. Some of the larger alveoli had papillary ingrowths. Groups of lymphoid cells were seen.

On the first day, the pulse rate was 160. There was marked cyanosis. Saline solution (2,500 c.c.) was given by hypodermoclysis. On the second day, the temperature was 104.2 F. On the third day, there were a few râles in both lower chests; the temperature was 100.5 F.; the pulse rate, 100. On the fifth day, the hands were tense and cramped; there was double vision; catamenia occurred. On the sixth day, the hands were tense and cramped; there was difficulty in talking. Morphin sulphate, one-fourth grain (0.016 gm.), subcutaneously, and calcium chlorid, 25 grains (1.6 gm.) were given twice by mouth. On the seventh day, calcium chlorid, 25 grains (1.6 gm.) was given thrice. The patient seemed improved. On the ninth day, the patient developed frank tetany with all its usual signs and symptoms, which increased until 30 c.c. of a 2 per cent. calcium chlorid solution was given intravenously.

On the tenth day, the hands and feet again assumed the typical position of tetany; there was marked dyspnea and cyanosis; the patient was unable to speak, and thought that she was going to die; there were marked Trousseau's and Chvostek's signs. Two per cent. solution of calcium lactate 65 c.c., was given intravenously with only slight relief of symptoms. Two hours later, the patient's condition was much worse, and she was placed on the "serious list." A tracheotomy set was prepared. Morphin sulphate, one-fourth grain (0.016 gm.), atropin sulphate, $\frac{1}{150}$ grain (0.4 mg.), and epinephrin chlorid, 5 minims (0.3 c.c.) was given subcutaneously without relief. Five per cent. (nearly saturated) calcium lactate solution, 220 c.c., was given intravenously, with entire relief of the symptoms, by the time the procedure was completed. A throat consultant reported that there was no paralysis. Morphin sulphate and atropin sulphate were given twice during the afternoon.

It was then, recalling the work of Luckhardt and Dragstedt, that we placed the patient on a protein free diet, with colonic irrigations twice daily, a 5 per cent. lactose rectal drip, calcium lactate, 100 grains (6.5 gm.), every three hours by mouth (at the rate of 1.5 gm. per kilogram of body weight, it would take approximately 1,100 grains [65 gm.] daily), parathyroid, one-fifth grain (13 mg.) and thyroid, 1 grain (0.065 gm.), three times daily. On the twelfth day, there were no further signs of tetany, so the calcium lactate was reduced to 50 grains (3.25 gm.), every three hours. On the fourteenth day, the calcium lactate was reduced to 25 grains (1.6 gm.) every three hours, the thyroid to 1 grain (0.065 gm.), once a day and the colonic to once daily. On the fifteenth day, the calcium lactate was reduced to 25 grains (1.6 gm.), every four hours; the protein free diet was discontinued and the patient placed on the regular house diet. On the sixteenth day, at 6 a. m., the patient had moderate carpopedal spasm and beginning throat symptoms. Calcium lactate, 75 grains (4.8 gm.), was given by mouth with no relief. Then 220 c.c. of a 2 per cent. calcium lactate solution was given intravenously with almost

4. Dragstedt, L. R.: The Pathogenesis of Parathyroid Tetany, J. A. M. A. **79**: 1593 (Nov. 4) 1922.
5. Luckhardt, A. B., and Goldberg, Benjamin: The Preservation of the Life of Completely Parathyroidectomized Dogs by Means of the Oral Administration of Calcium Lactate, J. A. M. A. **80**: 79 (Jan. 13) 1923.
6. Foster, N. B.: Disease of the Parathyroids, in Nelson's System of Medicine **3**: 313.
7. Clute, H. W.: The Treatment of the Complications Arising After the Operations on the Thyroid Gland, Boston M. & S. J. **191**: 1150 (Dec. 18) 1924.

instant relief of the main symptoms, while the others were relieved within half an hour. Calcium lactate, 75 grains (4.8 gm.), was given by mouth in three hours, and the orders changed to 50 grains (3.25 gm.), every three hours. The diet was reduced to 30 gm. of protein a day, the balance of the 4,000 caloric requirement being supplied mainly by carbohydrate. On the nineteenth day, the parathyroid was reduced to one-tenth grain (0.006 gm.), three times daily, and the calcium lactate to 20 grains (1.3 gm.), four times daily. On the morning of the twenty-first day, there was evidence of beginning tetany, which was relieved by 100 grains (6.5 gm.) of calcium lactate by mouth. The calcium lactate was again increased, this time to 30 grains (2 gm.), four times daily, and 20 grains (1.3 gm.), between midnight and 2 a. m. On the morning of the twenty-second day, slight tetany was again present. Calcium lactate, 100 grains (6.5 gm.), was given by mouth, but this did not relieve the symptoms as rapidly as formerly, although the patient was entirely relaxed in several hours. The midnight dose of calcium lactate was increased from 20 grains (1.3 gm.) to 30 grains (2 gm.). On the twenty-third day, at 6 a. m., the patient's hands were stiff. In order to rule out any nervous element, only 20 grains (1.3 gm.) of calcium lactate was given by mouth. No relief of symptoms was experienced, so at 10 a. m., 100 grains (6.5 gm.) was administered with relief. On the twenty-fourth day, 100 additional grains (6.5 gm.) of calcium lactate was needed to avert tetanic symptoms. The amount was increased to 50 grains (3.25 gm.), five times daily. On the twenty-ninth day the calcium lactate was reduced to 30 grains (2 gm.), three times daily. On the thirtieth day there was tingling of the fingers, and the patient did not feel so well. The calcium was again increased to 50 grains (3.25 gm.), five times daily, and the patient instructed to maintain this amount after discharge.

September 5, one week following discharge from the hospital, the patient was admitted to the emergency ward in severe tetany. Two per cent. solution of calcium lactate, 220 c.c., was given immediately intravenously with relief of symptoms, but not as rapidly as on previous occasions. The patient had been menstruating for the past three days. She was placed on a meat free diet, given calcium lactate, 50 grains (3.25 gm.), six times daily, and thyroid and parathyroid as at the last admission. She had moderate diarrhea. As during the previous admission, whenever the calcium was lowered or withdrawn without altering the thyroid or parathyroid, the patient evidenced signs of tetany. Blood taken for analysis, previous to the administration of the intravenous calcium, showed the carbon dioxid power of the blood plasma to be 59.4 per cent. by volume. The patient was discharged in fourteen days with instructions to continue taking 50 grains (3.25 gm.) of calcium lactate six times daily.

Oct. 16, 1923, the patient was admitted for the fourth time Catamenia was present. Moderate tetany had been observed in the clinic, and the patient was immediately referred to the hospital. She had been lax in taking her calcium at home. Calcium lactate, 50 grains (3.25 gm.), four times daily, relieved her symptoms, and she was discharged in five days. The basal metabolic rate taken at this time was —9; —17; +1.

Dec. 17, 1923, she was admitted for the fifth time. She was in typical tetanic convulsions. Her intake of calcium had been markedly reduced in the dispensary. Two per cent. solution of calcium lactate, 500 c.c., given intravenously, was needed to afford relief. She was then given, orally, 100 grains (6.5 gm.), every four hours, protein free diet and other treatment as during previous admissions. She had two or three bowel movements daily. Her weight was 138 pounds (62.6 kg.). She was discharged in nineteen days with instructions to take 50 grains (3.25 gm.) of calcium lactate six times daily.

According to the dispensary record, Jan. 29, 1924, the patient was markedly improved, so that her night calcium was discontinued. May 19, the parathyroid and calcium were reduced. She had tingling in the hands and feet during the menses. June 5, thyroid, 1 grain (0.065 gm.), was added. June 17, she had marked diarrhea. The thyroid was discontinued. August 19, she was feeling fine and gaining weight. She had gradually reduced the amount of calcium to 50 grains (3.25 gm.), once daily. August 19, the calcium was discontinued. September 24, she presented herself at the clinic in mild tetanic convulsions. She had been taking some calcium, even though it had been discontinued, as it made her feel better. The menses were present.

She was admitted to the hospital for the sixth time. She was given 100 grains (6.5 gm.), orally, of calcium lactate immediately, with relief. The dose was repeated in two hours. The basal metabolic rate was —14. She was discharged in four days.

According to the dispensary record, November 25, the patient was still taking parathyroid, one-tenth grain (0.006 gm.) three times daily, but no calcium, except for one dose of 100 grains (6.5 gm.) when she felt as though tetany was reappearing. She had attacks of tingling in the hands and feet, nervousness and diarrhea. She was placed on calcium, 50 grains (3.25 gm.), once daily, for one week previous to and during the menses. December 23, the diarrhea persisted. She complained of insomnia and loss of weight. The calcium was increased in the hope of controlling the diarrhea. March 23, 1925, a home call disclosed the fact that she had not felt it necessary to come to the clinic; she was feeling "fine"; there had been no diarrhea for eleven weeks. She had passed through the January and February menses with only an occasional dose of calcium. The March menses were now present, and she had taken no calcium as yet. She presented no symptoms of tetany. Her weight was 139 pounds (62.6 kg.). There was a questionable exophthalmos; there was no von Graefe's sign. Chvostek's sign was still positive. Following the constriction of the upper arm for three minutes, a slight Trousseau's sign could be obtained. The heart rate was 86, and regular.

COMMENT

In the severe case of human parathyroid tetany here reported, the therapy necessary to preserve life, as determined by Luckhardt's and Dragsted's animal experimentation, was applied with successful result. The relative importance of the two factors, the carbohydrate feeding and the calcium intake, individually is not known, as the rapid reduction of the amount of calcium and the feeding of a diet high in protein both produced tetany. The patient, however, was able to take a mixed diet plus calcium, long before she could a protein free diet minus calcium.

The response to intravenous calcium was exceedingly rapid; at the beginning of the injection, the patient would be markedly cyanotic, dyspneic, aphonic and generally tetanic, with an especially marked carpopedal spasm. The venipuncture had to be made rapidly, as the tourniquet produced a marked Trousseau's sign and flexion of the arm, thus making entrance to the basilic veins impossible, those on the dorsum of the hand being utilized instead. As soon as a gram or two of calcium was administered, breathing became easier, the cyanosis and spasm began to disappear, and the patient could speak, at first only in a whisper but soon perfectly normally. With the larger injections, all the cardinal signs and symptoms were relieved by the end of the injection. The calcium could be given as often as necessary, no signs of nephritis having developed.[8]

The analogy to conditions as found in animals was striking: At first, 1.5 gm. of calcium lactate per kilogram of body weight was found necessary; the withdrawal of calcium for only short periods provoked attacks; the tetany was more easily induced, and more calcium was needed to control the attacks during and just preceding the menses.

Desiccated parathyroid has been taken almost constantly during the entire period, and desiccated thyroid

8. Mason, R. L.: Tetany, Surg. Clin. of N. A. 4: 1501, 1924.

intermittently, and at no time has the tetany been controlled thereby. In fact, these substances have probably assisted in the production of the troublesome diarrhea.

The tetany exists independently of any thyroid deficiency, as the patient shows no symptoms of a beginning myxedema. The basal metabolic rate has not been below —17, and two other determinations at the same time gave readings of —9 and +1. The one blood carbon dioxid taken during an attack was normal, indicating no alkalosis.

The duration of the disease is problematic, but with the marked alleviation of symptoms so far obtained, the prognosis for an eventual cure is excellent.

CONCLUSIONS AND SUMMARY

1. A severe case of parathyroid tetany, relieved primarily by calcium therapy, was followed for twenty months.

2. The prognosis for severe tetany is not always poor.

3. The intravenous injection of calcium lactate in a solution of from 2 to 5 per cent. at no time failed to relieve almost instantly the tetanic symptoms.

4. Massive doses orally, as high as 1,100 grains daily, also controlled the condition.

5. There is a similarity between animal (dog) and human tetany in respect to calcium intake, diet, intestinal stasis, and menstruation.

121 De Kalb Avenue.

FORCED CONJUGATE UPWARD MOVEMENTS OF THE EYES

IN POSTENCEPHALITIC PARKINSON'S SYNDROME *

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In November, 1923, my attention was first directed to an extraordinary eye symptom which the ophthalmologists assured me was known to them only as an hysterical symptom. A patient was discharged from his job as street-car conductor because his eyes had "turned up" and he "could not get them down again." A few days later another patient came into our outpatient department with her eyes turned up and to the left, with curious nystagmoid movements, and she "could not turn them down." The ophthalmologists examined her immediately afterward and assured us that no objective findings could account for the difficulty. A careful search of the literature at that time failed to reveal any reference to such eye muscle spasms. Both cases were clearly postencephalitic Parkinson syndromes. The fact that both cases had developed without acute febrile attacks and were recognized only after the full development of the rigidity with masklike facies and typical Parkinson attitude gave us an idea that this symptom might be a manifestation of an unusual form of the disease. However, in the last month, two more patients with Parkinson's syndrome, following encephalitis, who have been observed over a long period and whose onset was of the usual acute form, have reported the same symptom.

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Another search of the literature shows that three German observers have since 1924 reported the same eye muscle spasm (Blickkrampf). Fischer,[1] who could find no reference to this symptom in the literature, thinks that the symptom cannot be uncommon because he has observed it in five cases, and Meyer,[2] reports two other cases. In one of Meyer's cases the spasm held the eyes in position to look down and to the left. In two of Fischer's cases the disturbance was accompanied by nystagmus. Only one of our cases showed accompanying nystagmus. Ewald,[3] in December, 1924, reported five cases which he calls Schauanfalle. In two of his cases the head and eyes were drawn to the left, while in the other three the eyes were drawn upward without movement of the head as a whole.

The symptom consists simply of an involuntary turning up of the eyeballs and a holding of the eyes in that position. The patients are unable to turn the eyes down, and they are aware of no pulling or tension. The spasm is not painful. Careful examination of the eyes reveals no muscle weakness, paresis or paralysis, and no muscle imbalance. The attacks may last for from several minutes to several hours, and may even persist for half a day. Attacks may occur as often as twice a week, and may not occur more than once in several months. The symptom is apparently a late manifestation of the disease because it occurred four years after onset in one case, six years in another, three years in the third case, and one year in the last case.

The symptom is particularly interesting because it offers another example of a kind of symptom which we have always been inclined to regard as belonging to the purely psychogenically determined disorders. The study of the symptomatology of epidemic encephalitis has led us to realize that many of the symptoms that we know as psychogenically conditioned may also appear in an organically determined disease. I refer to tics, obsessive activity, positions of election, vague psychoneurotic complaints, etc.

A recent study [4] of the neuropathology of the disease convinced us that the evidence of relatively acute inflammatory reaction persists for years after the onset of the disease. It may be that these eye muscle spasms are evidence of a persisting inflammatory focus in the midbrain.

I append a brief clinical summary of the four cases and the ophthalmologists' reports.

REPORT OF CASES

CASE 1.—W. W. R., a man, aged 23, single, a taxicab driver, found himself getting "nervous" a year before consulting us. His walking became slow and stiff, and he felt dopy. Nevertheless, he had great difficulty in getting to sleep at night. His legs showed rhythmic movements of flexion at the hips when he sat down, and, in addition to his general Parkinson attitude, he found his arms in position of marked flexion when he walked. He was discharged from his taxicab job after he had an accident, and got a job as street-car conductor. He was discharged shortly afterward because, while on duty, his eyes turned up, and he could not get them down. The same attack occurred a month later. Small doses of scopolamin (hyoscin) completely relaxed

1. Fischer, Bruno: Ueber vestibuläre Beeinflussung der Augenmuskelstarre bei der Encephalitis epidemica, Deutsch. Ztschr. f. Nervenh. **81**: 164, 1924.

2. Meyer, A.: Beitrage zur Encephalitis epidemica, Arch. f. Psychiat. u. Nervenh. **70**: 503, 1924.

3. Ewald, G.: Shauanfälle als postenzephalitische Störung (Zugleich ein Beitrag zur Frage psychischer Störungen bei postenzephalitischen Zuständen), Monatschr. f. Psychiat. u. Neurol. **57**: No. 4, December, 1924.

4. Hohman, L. B.: Pathologisch-anatomische Untersuchungen über den encephalitischen Parkinsonismus, Arb. a. d. Neurol. Inst. a. d. Wien. Universität **37**: No. 1.

him, and he thought himself so well that he joined the navy, only to be discharged when his medication was discontinued.

CASE 2.—A. W., a nursemaid, aged 26, began to have periodic attacks of drowsiness, early in 1920, while at work in a drug factory. No attention was paid to the attacks, and she married a few months later. She was deserted by her husband two months after marriage, and, although he returned for a few months at the time of the birth of their child, he has since completely disappeared. Early in 1923, the patient became increasingly fatigable, and the family noticed a definite body rigidity; her arms no longer moved when she walked, her gait was somewhat shuffling, she became tremulous very easily on exertion, and her face was rigid. She was depressed and hopeless. In addition to these symptoms, she had attacks in which her eyes turned upward and outward and showed nystagmoid movements. She "could not get them down." The attacks varied in duration from a few minutes to two hours, and usually occurred three or four times a week. The patient was brought to the hospital, where a diagnosis of postencephalitic Parkinson syndrome was made and she was given scopolamin hydrobromid, one seventy-fifth grain (0.0008 gm.), three times a day and at 8 p. m. Her rigidity was markedly relieved, and there was some improvement in the eye spasm. After much effort she went to work, and for more than a year has been nursing three children and helping with the housework. She gives complete satisfaction to her employers, and has only occasional eye attacks. The rigidity is completely relieved by scopolamin but promptly reappears when the scopolamin is discontinued. The ophthalmologist could find no muscle imbalance or paresis, and thought at first that the condition was hysterical, because of the lack of vertigo and her good coordination in walking. However, he has changed his opinion since the discovery of the other cases.

CASE 3.—W. H. B., a man, aged 31, married, a packer, had an acute attack of "grip" with fever, giddiness, diplopia and somnolence, in October, 1918. He apparently recovered completely but, early in 1919, had difficulty in reading. During the winter of 1920, he had another febrile attack with insomnia. Following this he became more and more sleepless; his gait became slow and dragging; he developed a masklike facies and tremor of the hands. He became timid with people, was unable to work, and was excessively irritable with his wife. A neurologic examination done on admission to the Phipps Clinic, in June, 1922, showed: (1) facial tremor of the face, more marked on the left; (2) tremor of the tongue with deviation to the right; (3) fine tremor of the hands; (4) masklike facies; (5) left pupil larger than the right, and (6) slow gait with rigidity. The spinal fluid showed no abnormality. The patient became so irritable and self-conscious that he was finally sent to a state hospital. He escaped, but came back to the Phipps outpatient department in April, 1924, for treatment. He was put on scopolamin, one-fiftieth grain (0.001 gm.), three times a day and at 8 p. m., and showed some improvement. In September, 1924, he reported that he "had a habit of looking up in the air." His "eyes got up in the air," and he "couldn't get them down." Since then he has had similar attacks lasting for from ten minutes to twelve hours, and the attacks vary in frequency from ten days to a month. The symptom seems unaffected by scopolamin. At times the eyes are drawn first to the left and then turn up.

CASE 4.—C. P., a man, aged 31, having no occupation, had been drowsy for a month, in May, 1920, and then developed a sleepless delirium with high fever. His mouth was pulled to the left, and the left eye was pulled downward. The acute condition improved, but in September he had a marked increase in salivation. In 1921, he had rhythmic respiratory dyspnea. In January, 1922, marked rigidity began, so that very soon he had to be fed, dressed, washed, etc., by his mother. With large doses of scopolamin (one-fiftieth grain [0.001 gm.] three times a day and at 8 p. m.) he showed remarkable improvement and was able to return to light work. His right foot tended to "turn" in as he walked, and there was an excess flexion at the knee. For the last few months the patient has noticed that his eyes turn up, and "he can't get them down." These eye "spasms" last from fifteen minutes to two hours. The eyes turn to the left first and then turn up. No pain or tension is associated with it. The attacks occur as often as once a week and as seldom as one a month. The ophthalmologists report no abnormality except an astigmatism.

OXYGEN THERAPY IN PNEUMONIA

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The older methods of oxygen therapy in pneumonia, still generally in use, have not been satisfactory, from the standpoint either of their convenience of application or of the results obtained. The method here described has many advantages.

Oxygen therapy should be accomplished with the least possible degree of irritation or discomfort to the patient. It should be started as early as the first appearance of cyanosis of the finger nails. No harm can be done if applied even earlier. It should be maintained continuously from the beginning until adequate tissue oxygenation can again be had without excess effort, from atmospheric air. This period of administration may be continued from a day to two weeks, as the condition of the patient indicates. As long as the patient requires an oxygen plus atmosphere to maintain tissue respiration without effort, it should be furnished.

Intermissions in oxygen administration in pneumonia, in the presence of anoxemia, serve to subtract proportionately from the chances of recovery. The expense of this therapy should be within the reach of all patients. It should be so simple as to require but little attention from the physician. It should be available equally in hospital or in home, in the city or the small town.

METHOD OF APPLICATION

As employed in St. Vincent's Hospital, and generally in the city of Indianapolis, the method of application is as follows:

Commercial oxygen is used; for this work it is as satisfactory as medical oxygen, and is many times less expensive. It is purchased in either the 110 or the 220 cubic foot cylinders. There is neither economy nor convenience in smaller cylinders.

To the cylinder is connected a pressure reducing gage so graduated as to indicate the flow of oxygen in liters per minute, from one to twelve. From this gage the oxygen is carried through an ordinary one-fourth or three-eighths inch rubber tube, from 5 to 10 feet long, into a small tent placed over the patient's head.

The construction of the tent is simple. Our tents are made by cutting in two a 24 to 30 inch wooden barrel hoop. The two halves of the hoop are crossed and tied together, to make the tent frame, roughly hemispherical in shape. This frame is set over the patient's head and covered with an ordinary muslin sheet, the excess sheet being tucked about the bottom of the frame in such a way as to prevent gross leaks. We sometimes leave a ventilation aperture, about 4 inches in diameter, at the most dependent part of the tent. However, such ventilation is not necessary, and seems to make no difference in the result. Although there may be some waste of oxygen by using only a single thickness of muslin for the tent cover, to use more than one layer increases the heat within the tent to the discomfort of the patient. With one thickness only, the radiated heat of the patient within the tent is rapidly dissipated. The oxygen tube is inserted through the top or side of the tent in such a way as to deliver the oxygen into the neighborhood of the patient's face.

Analysis of the gases within the tent shows that there is but little difference in the oxygen or the carbon dioxid content of the air anywhere within the tent. For example, a tent made of a 24 inch barrel hoop covered with one thickness of medium weight muslin was used. The patient was a normal man, aged 26, treated half an hour after a full meal. The gas specimen was taken after fifteen minutes' confinement under the tent. The oxygen was flowing at the rate of 3 liters a minute through the delivery tube directed downward from the top of the tent and toward the patient's face. The end of the tube was 5 inches from the face.

The first specimen was taken from between the end of the delivery tube and the patient's face, 2 inches from the face, and 3 inches from the end of the tube. This specimen showed: oxygen, 32 per cent.; carbon dioxid, 5.2 per cent. A second specimen, taken at the same time from the most remote part of the tent, on the side opposite the ventilation opening mentioned above, showed: oxygen, 35 per cent.; carbon dioxid, 3.2 per cent.

TECHNIC

The technic is simple. With the first appearance of cyanosis of the finger nails, the administration is started with an oxygen flow sufficient to keep the finger nails pink. This requires a flow of from 2 to 6 liters a minute. The nurse is instructed to keep the finger nails pink with as low an oxygen flow as possible, but to keep the finger nails pink. In most cases this can be done with a flow of 3 or 4 liters. The administration is then maintained continuously, the flow being varied in accordance with the changing demands, until there is no further need for it. This may be one day or a week or longer.

During necessary interruptions, the finger nails are watched for cyanosis. The criterion for discontinuance, when such is contemplated, is the color of the nails after the removal of the oxygen. If they remain pink, well and good. If they show a returning cyanosis, the tent is replaced and the administration continued.

RESULTS

It is difficult to tabulate results in this work. It is possible only to guess at them. However, general appearances are all in its favor. In the cyanotic and dyspneic patient there is immediate relief from both cyanosis and dyspnea, as soon as the requisite dose is reached. We usually start the administration with a 6 liter flow and reduce it as indicated. Nervous symptoms that accompany air hunger are dissipated.

Occasionally a patient will object to the tent and ask for its removal. In these cases we compare the possible damage of anoxemia with the damage produced by irritation of the patient by forced use of the tent, and act accordingly.

In the cases of infants and small children, the whole body is covered by a larger tent, usually made by draping the sheet over the crib sides, and the oxygen flow is increased to compensate.

It is difficult to establish whether or not lives are saved by this method, but we feel sure that they are. The apparent elevation of the morale of the patient, and the alleviation of distress, would seem to present a better fighting chance for recovery.

COST

The list price of commercial oxygen in the larger size cylinders is $1.85 per hundred cubic feet. At an average continuous flow of 4 liters a minute, 100 cubic feet of oxygen will last approximately eleven hours.

The Indianapolis hospitals now have the metering gages as part of their hospital equipment. For residence cases, the surgical supply houses of this city have the gages and tent equipment for rent at a nominal daily charge. The oxygen company delivers the oxygen to the home, and the surgical supply dealer sends the rest of the equipment and sets its up. Thus, within an hour, the oxygen therapy is established, and is maintained at a cost of $6 or $8 a day. There is no doubt that the same service can be established in any city. In rural communities the garage man with an oxyacetylene welding outfit can furnish the emergency oxygen, and the gage can be rented from a nearby dealer.

CONCLUSION

This work has been done in an effort to establish a practical system for the administration of oxygen in pneumonias.

The present unpopularity of oxygen therapy in this field is the result of a faulty and skimping technic.

Properly applied oxygen therapy is of undoubted value, and is deserving of the close attention of the medical profession.

4455 Carrollton Avenue.

Clinical Notes, Suggestions and New Instruments

OXYGEN INJECTIONS IN THE TREATMENT OF TUBERCULOUS PERITONITIS

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At least 75 per cent. of the ascitic forms of tuberculous peritonitis are cured by laparotomy. Spencer Wells, in 1862, unintentionally operated on a patient with tuberculous peritonitis, who made a prompt recovery. He had diagnosed the condition before operation as a case of ovarian cyst. Operative treatment was first advised by Koenig, in 1884, but it never has been known just why a mere laparotomy cured the condition. Hildebrandt thought that the postoperative hyperemia was the cause. Others thought it was simply the admission of air. Gatti believed that the fluid exudate that follows operation exerted an injurious or bactericidal effect on the tubercle bacilli and thus promoted recovery. Murphy had the good fortune to see the peritoneum three or four days after operation for tuberculous peritonitis. He found that it was intensely congested, that its vascularity was greatly increased, that its gloss was almost or quite abolished, that it contained a seropurulent cloudy fluid, and that active proliferation seemed to be encapsulating the tuberculous foci. Undoubtedly this is the way tuberculosis of the peritoneum is cured. What we mean by a cure is simply encapsulation, with the process becoming quiescent.

The use of oxygen injections in the treatment of tuberculous peritonitis was reported first in 1920 by Rost.[1] At that time and later, he noted a markedly beneficial effect from the injection of oxygen. He found that the injection of oxygen would separate the adherent surfaces of the peritoneum and tended to break up adhesions. It prevented the outpouring of exudate, and he believed that it inhibited the tuberculous process. It also decreased pain when injected into tuberculous joints. He classified the effects as: (1) mechanical, as in ankylosis of joints; (2) therapeutic, which effect he found in psoas abscess, and (3) therapeutic and mechanical combined, as in tuberculous peritonitis and tuberculous joints.

Similar results were reported by Weil and Loiseleur,[2] who used air injections. Their cases apparently were of the plastic type. We know that operation in the plastic type gives a prognosis that is much poorer than in the ascitic form. Similar results also were reported by Stein,[3] who quoted good results by Bainbridge and McGlinn.

1. Rost, E.: Indian M. Gaz. **55**: 329 (Sept. 9) 1920; Brit. M. J. **2**: 978 (Dec. 10) 1921.
2. Weil, P. E., and Loiseleur, J.: Bull. et. mém. Soc. méd. d. hôp. de Paris **45**: 1661 (Nov. 19) 1921.
3. Stein, Arthur: Oxygen Inflations of Peritoneal Cavity in Tuberculous Exudative Peritonitis, J. A. M. A. **78**: 718 (March 11) 1922.

REPORT OF CASE

A man, aged 56, a Serbian, entered the Alexian Brothers' Hospital, March 9, 1922, saying that he had been entirely well until two months before entrance, when he began to complain of vague symptoms. About a month before coming into the hospital, his abdomen would distend after eating, and he passed a great amount of gas. Examination on entrance to the hospital revealed considerable fluid in the abdominal cavity, but the only symptoms were abdominal discomfort, temperature about 99 F., slight tenderness in the abdomen, and a sense of fulness and depression in the stomach after eating. The case was studied for several days, and finally a diagnosis of tuberculous peritonitis was made.

March 25, a laparotomy was performed. There was a large amount of free fluid present. The small bowel was red and injected and covered with tubercles. The parietal peritoneum also was studded with tubercles. The abdomen was closed without drainage The appendix had been removed at an operation seven years previously. No focus of origin of the tuberculous process was found in the abdominal cavity.

April 3, the abdomen was distended even more than before the operation. April 10, the abdominal cavity was aspirated and several quarts of fluid removed. Four days later, distention was so great that the abdominal cavity was aspirated again, and, within three days, there was a recurrence of the abdominal distention due to gas and fluid. April 27, the abdominal cavity again was aspirated, and several quarts of fluid removed. The fluid recurred very rapidly after the aspirations. The patient was becoming weaker, was cachectic, was losing weight and in general was decidedly on the down grade, so that death seemed imminent.

May 6, the abdominal cavity was aspirated again, and oxygen was injected into the abdominal cavity until the man began to have a sense of fulness. After this treatment, the fluid did not recur so rapidly. Aspiration and injection of oxygen was repeated, May 22, and again the fluid was very slow in coming back. Aspiration and oxygen injection were repeated, June 26. July 1, he left the hospital with very little fluid in the abdomen. He was decidedly better and was improving rapidly.

September 14, there was no evidence of any fluid in the abdominal cavity; the man was gaining in strength, and, outside of a little trouble with constipation, he was having no symptoms. October 29, he was much better. There were no signs of fluid and no symptoms of tuberculous peritonitis. Jan. 29, 1923, he started to work. At that time, he had no complaint, his abdomen was flat, and no fluid could be demonstrated.

COMMENT

While I cannot state positively that oxygen injections were the cause of the cure, nevertheless this patient was becoming worse, and there was no improvement under the usual treatment until oxygen injections were used, and relief was rapid and progressive after that. I believe that the observation is well worth following up in other cases. Operation should precede the oxygen injections in order to remove the focus of origin of the peritonitis.

537 North Grand Boulevard.

COMPLETE AURICULOVENTRICULAR BLOCK, WITH AURICULAR FIBRILLATION AND VENTRICULAR EXTRASYSTOLES: REPORT OF TWO CASES

GEORGE H. ANDERSON, M.D., SPOKANE, WASH.

This is the report of two cases of complete heart block with auricular fibrillation and ventricular extrasystoles. The first patient had frequent Adams-Stokes seizures in the early part of the disease, but lived two and one-half years after the condition was first recognized. This case came to necropsy. The second case has been under observation eleven months.

REPORT OF CASES

CASE 1.—A man, aged 59, was admitted to the county infirmary, in the winter of 1921, from the hospital, where he had been confined because of frozen toes. At that time he had no other complaint. In November, 1921, he suddenly fell off a chair and lost consciousness for a few seconds. From then on, he had similar seizures as often as four or five times daily for six months. The number of seizures depended on the amount of exercise taken. Finally, when, because of the frequency of the attacks, he was forced to go to bed, they disappeared. It is amusing to know that attendants and convalescent patients about the ward would vigorously shake the patient during the seizures, believing that by so doing the heart was again stimulated to action. No history of previous illness was obtained. There was no history of venereal disease. The patient had been a heavy user of alcohol and tobacco.

The patient was first examined by me in September, 1922, almost a year after the apparent onset of the illness. Examination at that time revealed the heart to be about normal in size, the cardiac dulness extending 9.5 cm. to the left and 2.5 cm. to the right of the midsternal line. A loud systolic murmur, blowing in character, was heard over the apex and transmitted to the axilla. The rate was from 30 to 32 a minute. This was not changed by exercise. The peripheral vessels showed some evidence of sclerosis. Synchronous tracings of the radial and venous pulses showed a complete heart block with auricular fibrillation and ventricular extrasystoles (Fig. 1). The blood Wassermann reaction was negative. Unfortunately, because the patient was at the county infirmary, which is 18 miles distant, frequent observation could not be made. A second examination was made in July, 1923, at which time the findings were essentially the same. In February, 1924, the patient died. Details of his death could not be obtained. He apparently died in an Adams-Stokes seizure. Necropsy was done. The pathology of the heart was worked out by Dr. R. L. Benson of the University of Oregon Medical School. He found that the heart, together with 6 cm. of the aorta, weighed 390 gm. The left ventricle was enlarged, elongated, and formed the apex. The heart had previously been fixed in formaldehyd and opened in the usual manner, exposing the chambers and all the valves.

The right auricle was dilated and somewhat larger than normal. The endocardium was whitish in places, but in the region of the sinus node there were no gross changes. The papillary muscle of the inferior leaflet of the tricuspid valve was thin, flattened, and largely replaced by whitish scar tissue, which involved the endocardium beneath it. The other papillary muscles of the valve were flattened, but otherwise unchanged. The leaflets of the valve itself were thin and regular. The pulmonic valve leaflets showed no noteworthy changes.

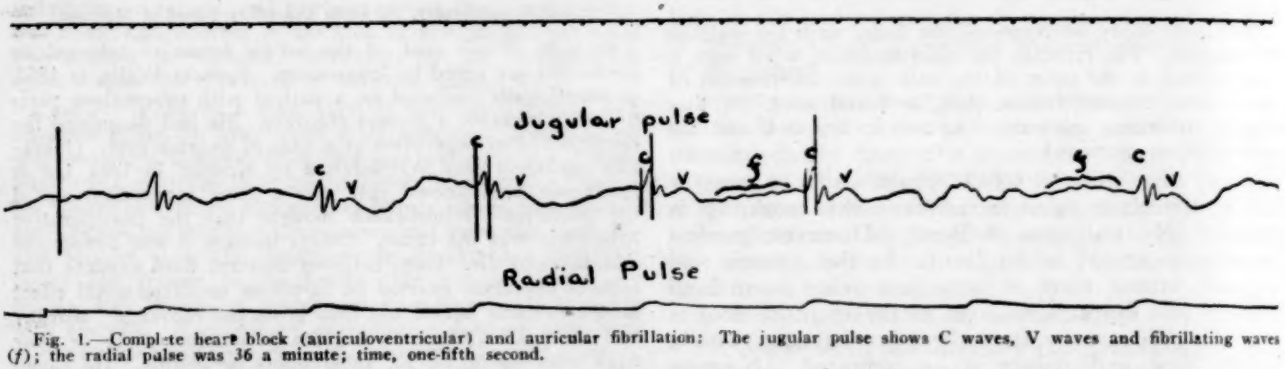

Fig. 1.—Complete heart block (auriculoventricular) and auricular fibrillation: The jugular pulse shows C waves, V waves and fibrillating waves (*f*); the radial pulse was 36 a minute; time, one-fifth second.

The cavity of the left ventricle was considerably dilated, the wall at the apex being 5 cm. in thickness. The trabeculae carneae were flattened. The aortic leaflet of the mitral valve was enormously thickened; its surface was whitish, except near its base, where yellowish, roughened areas of calcium showed through beneath the endocardium. The leaflet jutted out in a shelf-like manner for a distance of 1.5 cm. and pressed directly against the posterior leaflet. It was firm, stiff and unyielding. The chordae tendineae of this leaflet were, for the most part, fused into a large, whitish, fibrous band, having a thickness of 5 mm. The papillary muscles (two in this instance) were small and flattened. The chordae tendineae of the posterior leaflet were shortened to a remarkable degree, being only 2 or 3 mm.

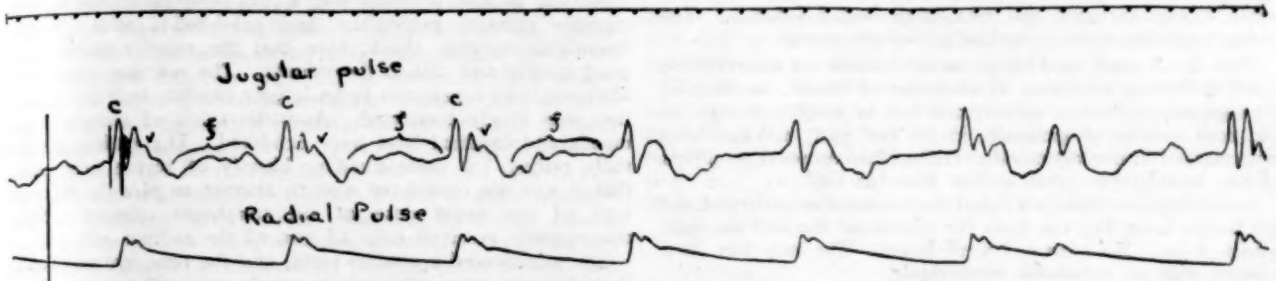

Fig. 2.—Complete heart block (auriculoventricular), auricular fibrillation and ventricular extrasystoles; tracing taken before exercise: The jugular pulse shows C waves, V waves and fibrillating waves (*f*); the radial pulse was 37 a minute.

long and fused into solid cords like those of the aortic leaflet. The distal end of the papillary muscle of this leaflet almost touched the junction point of the two leaflets. This leaflet was also thickened and stiff, but did not project out into the lumen to the extent to which the aortic leaflet did. The stenosis of this valve was marked. The cavity of the left auricle was well dilated. The leaflets of the aortic valve were slightly thickened. There was a moderate degree of arteriosclerosis of the ascending aorta, with some narrowing of the left coronary orifice; the right was freely patent. Across the cavity of the left ventricle from the septum to the base of the papillary muscle of the posterior leaflet of the mitral valve, and a second, 1 cm. below this, were two fine glistening bands of tissue similar to those described by some authorities as abnormal tendon-fibers, which are described as being composed of small branches of the conduction system.

The whole endocardium covering the space from the aortic ring downward to the free edges of the mitral valve leaflets was thickened and whitish. About the auriculoventricular ring, at the attachment of the mitral valve leaflets, there was a large, well defined, and almost complete ring of calcium, which anteriorly, where the musculature was cut to expose the aortic valve, had a diameter of 1.5 cm. Posteriorly, the ring was incomplete. It also appeared to be incomplete in the region just at the beginning of the muscular interventricular septum at the point at which the bundle of His (left branch) emerged. Here, however, there was great fibrous thickening of the endocardium, and it was possible that there was interference, either by pressure, scar tissue, calcification, or atrophy of the conduction at this point.

Further examination of the heart disclosed a light, yellowish area located between the opening of the coronary sinus in the right auricle and the membranous interventricular septum. This was located just beneath the endothelium, and was about 3 mm. in diameter. Careful dissection showed that this was a definite, thin band, which extended to the left and through the upper part of the interventricular septum. It was lost in the musculature before reaching the left side of the septum. The right branch could not be found. The structure (which was in all probability the auriculoventricular node) was soft in consistency and plainly outlined. The left branch could be traced to the markedly thickened endothelium on the left side of the septum and into the region of the ring of calcium previously described.

The mouth of the left coronary artery was somewhat narrowed by sclerosis of the aorta; the artery itself, and its main branches, also showed no changes, and appeared quite normal. The right coronary artery was moderately sclerotic in a few places, but at no point was the sclerosis marked or the obstruction serious. Normal anastomoses existed between the vessels. The special artery that supplies the sinus node was present, and coronal sections made at distances of 2 mm. revealed no changes in its wall or lumen. The artery which supplies the auriculoventricular node was likewise unchanged. The anterior septal artery was not found in this heart.

When a block for microscopic section was taken from the region occupied by the auriculoventricular node, the myocardium beneath was found to be hyaline, while deep to this were small rounded masses of lime salts.

Examination of the microscopic sections revealed a diffuse fibrosis in the region of the auriculoventricular node, with hyaline degeneration and, in places, infiltration by lime salts. The Purkinje tissue was indistinguishable and probably lacking. The surrounding myocardium was undergoing atrophy, and replacement by vascular granulation tissue, later by relatively vascular connective tissue, and finally by hyaline cicatrix. No evidence of active inflammation was observable.

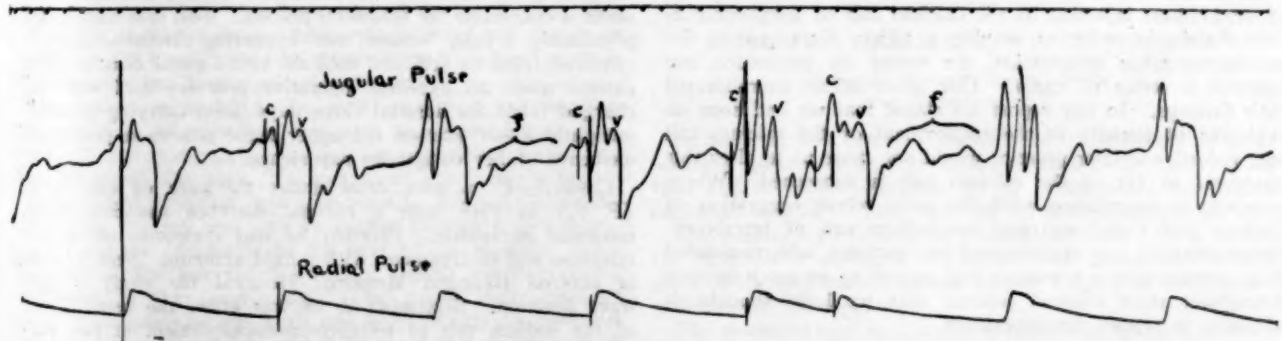

Fig. 3.—Complete heart block (auriculoventricular) and auricular fibrillation: tracing taken after moderate exercise; no change from Figure 2.

Microscopic examination of the aorta disclosed an arteriosclerosis with considerable infiltration by lipoid crystals, apparently cholesterol. The endocardial serous investment of the aorta was in places densely infiltrated by lymphoid cells, which were, however, lacking in the perivascular distribution characteristic of syphilis.

The mitral ring was firmly infiltrated by lime salts. Fibrosis and hyaline degeneration in the region of the auriculoventricular node and bundle had resulted in atrophy and more or less complete disappearance of the Purkinje tissue in this area. Syphilis was apparently not the cause, nor was the circulation apparently

destroyed. The probability is, however, that the whole fibrosis consisted of a sclerosis dependent on relative local circulatory insufficiency.

The rest of the necropsy disclosed firm fibrous adhesions of the lower left lung. The right pleural cavity was completely obliterated by moderately dense adhesions between the parietes and diaphragm. There was bullous emphysema of the apexes of the lung. The lungs pitted on pressure, except in the posterior portion, where they were firm and did not crepitate. On section, they collapsed and showed the average amount of fluid. The bronchial tubes of the left lung contained large quantities of pus. The spleen was small, and multiple small healed infarcts were seen. The liver showed passive congestion and increase of connective tissue. The right kidney showed a small subcapsular cyst and two small healed infarcts. The stomach and intestines showed no pathologic change.

CASE 2.—A man, aged 75, presented himself for examination, April 8, 1924, complaining of shortness of breath, swelling of the legs, nausea, loss of appetite and loss of weight. Symptoms had been coming on gradually in the last year, and had been most marked in the last month. He had had no previous illness of any significance except yellow fever in 1867.

Examination revealed the heart to be somewhat enlarged, the left border being 11.5 cm. from the midsternal line and the right border 4 cm. No murmurs were heard. The rate was 32 a minute, with an occasional extrasystole.

Other findings were an enlarged liver that extended four finger breadths below the costal margin, and edema of the legs up to the knees.

Polygraphic tracings showed an auricular fibrillation, complete heart block and ventricular extrasystoles (Figs. 2 and 3).

The patient was put to bed. He improved with rest and digitalis.

He was last examined in August, 1924, when some improvement in decompensation was noted. Heart findings and polygraphic tracings still remained the same.

In January, 1925, he reported that the edema had disappeared. Shortness of breath was still marked.

Paulsen Building.

ASEPTIC IRRITATIVE PHLEBITIS FOLLOWING INTRAVENOUS INJECTION OF SODIUM SALT OF TETRABROMPHENOLPHTHALEIN

FRANK SMITHIES, M.D., AND RICHARD BARTLETT OLESON, M.D.,
CHICAGO

On the publication of Drs. Graham and Cole[1] of their method of intravenous injection of the calcium salt of tetrabromphenolphthalein in order to develop a biliary tract opacity for roentgenographic observation, we tested the procedure and reported a series of cases.[2] Our observations corroborated their findings. In our report we stated that we had seen no evidences of toxicity in the employment of the calcium salt and, indeed, our later practice would not cause us to alter this statement so far as the calcium salt is concerned. When, however, in accordance with the more recent suggestion of Graham and Cole,[3] we used the sodium salt of tetrabromphenolphthalein, we encountered two patients who responded in so unsatisfactory a manner and caused us so much anxiety throughout their clinical courses that we have thought it advisable to report our experience.

REPORT OF CASES

CASE 1.—In the spring of 1924, Mrs. W. developed anemia with hepatic enlargement. Flagellate protozoa were found in the stools, and biliary tract stasis was evident. She was placed in the Henrotin Memorial Hospital for thymol administration and further observation, it being thought desirable to assure ourselves of the patency of the cystic duct. A solution of the sodium salt of tetrabromphenolphthalein was prepared after the following formula: Five grams of fresh tetrabromphenolphthalein sodium salt (Mallinckrodt) was dissolved in 40 c.c. of distilled water. This solution was then filtered and sterilized for twenty minutes by boiling in a water bath. The 40 c.c. solution was divided into two equal parts for intravenous administration.

At 8 p. m., the first injection was given at approximately blood temperature with a sterile, glass Luer syringe and gold needle. Before this was done the patient was anxious and apprehensive, but on assurances as to absence of pain and danger, finally permitted the procedure. The right cephalic vein was selected for the injection, it being prominent and well formed; no difficulty was experienced in entering its lumen. Immediately on the discharge of the first drops of the solution, the patient cried out, passed into a semicomatose condition, became bedewed with a cold perspiration, presented clammy, cyanotic extremities, and exhibited a state closely resembling surgical shock, save that the pulse remained of good quality and 100 to the minute. The reaction, although alarming, was considered to be largely psychic, and the injection was slowly completed. Aromatic spirit of ammonia by mouth and external heat were exhibited. The patient gradually rallied, but complained so bitterly of severe arm pain that it was not considered wise to attempt to give the second half of the usual dose of the tetrabrom solution. She consequently received only 2.5 gm. of the sodium salt.

She experienced a restless night, and the next morning said that the arm pain, although lessened, was still considerable. Hot, moist dressings gave some relief, so that four days after the venous injection, after suitable preparation, the patient was given thymol for the intestinal protozoa; there followed not more than ordinary discomfort. The arm vein remained tender, and hot dressings were continued. Nine days after the vein puncture, it was noticed that definite thrombosis had occurred. The arm was kept at rest by a splint, and hot boric compresses were applied. Some relief from the pain resulted, but day by day the thrombus spread along the course of the vessel. There was no sign of sepsis at any time. The only elevation of temperature occurred on the day on which thymol was given; it reached 100 F. for half an hour but promptly fell to normal, and the only pulse acceleration, to 100, took place at the same time. There was a slight leukopenia (5,000). No evidence was seen of any involvement of the surrounding tissues; the fluid had all entered the vessel, and the pathologic manifestations were confined within its walls.

Finally, surgical intervention could not with propriety be longer delayed, and, fifteen days after the salt had been injected, Dr. Ralph Kordenat, with local procain anesthesia, cut down on the vessel to the inside of the deltoid muscle about 3 cm. below the acromion process. The vein was ligated proximally, a pale, "washed out" appearing thrombus partially removed from its bed, and then the vein ligated distally. The patient made an excellent operative recovery and was discharged from the hospital three days later, carrying a rather unsightly linear scar on the upper right arm as a permanent memento of her dangerous experience.

CASE 2.—F., a man, came under the care of one of us (F. S.) in 1918 with a chronic diarrhea associated with intestinal parasitism. Recently he had symptoms of hepatic infection and enlargement, with a mild arthritis. Sept. 1, 1924, he entered Henrotin Memorial Hospital for study of gall tract function. September 2, he was given the usual 5 gm. of the sodium salt of tetrabromphenolphthalein in two portions, the left basilic vein being chosen. No untoward reaction was noted, but, September 14, the vessel exhibited tenderness, local, linear hardening and evidences of phlebitis at the site of and proximal to the puncture. Fortunately, by the aid of immobilization, hot boric acid dressings and bed rest, there occurred prompt resolution without definite obliterating thrombosis. He was discharged, September 26, and when seen again, December 29, the vein seemed normally patent.

RECAPITULATION

In two cases, aseptic, irritative phlebitis followed the intravenous injection of a sterile solution of the sodium salt of tetrabromphenolphthalein according to the technic recommended by Graham and Cole. In one instance, extensive, obliterating, traveling thrombosis followed. This spread so uninterruptedly, in spite of treatment, as to require surgical

1. Graham, E. A., and Cole, W. H.: Roentgenologic Examination of the Gallbladder, J. A. M. A. **82**: 613 (Feb. 23) 1924.
2. Smithies, Frank; and Oleson, R. B.: Illinois M. J. **47**: 97 (Feb.) 1925.
3. Graham, E. A.; Cole, W. H., and Copher, G. H.: Visualization of the Gallbladder by the Sodium Salt of Tetrabromphenolphthalein, J. A. M. A. **82**: 1777 (May 31) 1924.

procedure to prevent the involvement of major venous channels or the development of emboli. In the second case, early and prompt treatment proved effective, and the formation of a large clot was avoided. Both patients presented general physical impairment of moderate degree. It is interesting to note that each patient was of Northern birth and early residence, but had removed, in later life, to tropical or subtropical climates, where each had become infested with intestinal protozoa, and had developed lesions suggestive of early biliary tract malfunction.

CONCLUSIONS

Our experience would seem to suggest the use of the calcium salt of tetrabromphenolphthalein, in preference to the sodium salt, when the method of Graham and Cole is to be utilized for the roentgenographic visualization of the biliary tract, in the examination of patients presenting a history of long continued intestinal and hepatic infection. We would suggest particular caution in instances in which patients have had recent residence in hot climates, and whose early life had been spent in Northern climates, particularly when infestation with protozoa can be demonstrated. We are not able to cite the particular anatomic defect in the venous intima associated with its abnormal susceptibility under the conditions named, nor does our present material enable us to offer any diagnostic criteria serviceable in determining whether even the calcium salt may, with propriety, be used in such patients, or whether all preparations of tetrabromphenolphthalein ought to be considered as contraindicated in the circumstances mentioned.

HEMANGIOMA OF THE PHARYNX AND LARYNX *

D. B. HAYDEN, M.D., AND E. W. HAGENS, M.D., CHICAGO

This case is reported because of the rarity of the condition. R. L., a man, aged 24, presented himself to the clinic for diagnosis and treatment of a throat condition. The father stated that when the patient was 6 months of age he was subject to a severe spell of dyspnea. A physician advised tracheotomy because of obstruction in the throat. This procedure was refused by the parents, and the patient recovered spontaneously from the attack. Since that time the father had known that there was some growth in the patient's throat, and was convinced that he was born with it. During his boyhood days there had been practically no symptoms, except at times during sleep, when breathing seemed to stop momentarily, because of an apparent obstruction at the larynx. Some hoarseness had also been noticed during the last few years. There had been no hemorrhage from the throat at any time. So far as could be determined, no other members of the family had been similarly affected.

The patient appeared to be well nourished and healthy. The ears, nose, nasopharynx and teeth appeared normal. The left tonsil was moderately enlarged, but at the site of the right fossa no tonsil was seen. Instead there was a fairly prominent mound of irregular dark blue vessels. With the laryngeal mirror, the process was seen to extend backward and downward along the right side to the base of the tongue. From the base of the left tonsil fossa, a similar patch extended downward to the same point. The tissue then extended completely around the epiglottis and laterally into the pyriform sinuses. From here downward it involved the region of both arytenoids (especially on the right side), the ventricular bands and ventricles, and ceased just above the true cords. The tissue throughout was dark blue, nonpulsating, and irregularly lobulated. The glottic space was patent, but was somewhat narrowed. The voice was normal. The patient could not stay in the city, but has promised to return in the near future for treatment.

With the history and the appearance of the tissue, the diagnosis of hemangioma would seem definite. Reports in the literature show that these tumors are either congenital or develop early in life. They may remain practically stationary, causing no symptoms for years, or may develop gradually, or even at times rapidly. It is difficult to say whether this tumor has been advancing or not, but it would seem probable that there has been some extension. As regards treatment of these cases, surgery is advised whenever possible; otherwise, cautery or radium treatment. Because of its extent and situation, surgery would seem contraindicated and radium the treatment of choice.

* From the department of otolaryngology, Central Free Dispensary, Rush Medical College.

A COMPACT APPARATUS FOR THE CLINICAL DETERMINATION OF GASTRIC ACIDITY *

DANIEL N. SILVERMAN, M.D., AND WILLEY DENIS, PH.D.,
NEW ORLEANS

A rapid method for the determination of gastric acidity by means of test papers was recently described by us.[1] Since this description, we have devised a compact indicator set [2] for carrying out the method in clinical work.

The apparatus consists of a small wooden case which contains (*a*) six vials of standard buffer solutions ranging in p_H from 3.0 to 1.4, each labeled respectively; (*b*) a vial of test papers impregnated with thymolsulphonephthalein solution, and (*c*) a vial of test papers impregnated with dimethylamino-azobenzene solution (Töpfer's reagent).

Colors

Indicator	p_H	Color	Comment
Töpfer's reagent	1.4	Deep red	Hyperacidity
Töpfer's reagent	1.6	Reddish orange	Normal acidity
Töpfer's reagent	1.8	Orange	Normal acidity
Töpfer's reagent	2.0	Yellowish orange	Hypo-acidity
Thymol blue	2.0	Purple-red	Hypo-acidity
Thymol blue	2.4	Faint pink	Hypo-acidity
Thymol blue	3.0	Yellow	Anacidity

The hydrogen ion concentration of a sample of gastric contents is determined by pouring a small portion of the unfiltered material over one end of a test paper. From the table of colors in the accompanying tabulation it is then possible to tell at a glance whether the specimen is hyper, hypo, or of normal acidity. A small quantity of one of the buffer solutions of a reaction similar or nearly similar to what is believed to be the p_H of the gastric contents (as determined by the color produced by the latter on the test paper) may be poured on the other end of the same piece of paper and the color so obtained compared with that produced by the unknown sample. The reading on the label of the standard expresses the amount of hydrochloric acid in terms of p_H.

419 Physicians and Surgeons Building.

PREVENTING LEAKAGE AFTER GASTROSTOMY

CHARLES EVERETT HAINES, M.D.,
NEW ROCHELLE, N. Y.

In none of the common methods of gastrostomy is there adequate provision against leakage around the gastrostomy tube and into the peritoneal cavity. I therefore suggest an expedient to which I have resorted for preventing this leakage.

The gastric wall is sutured around the tube. Then, before the stomach is anchored to the anterior abdominal wall, a piece of the omentum is drawn up and sutured to the stomach wall around the tube.

The omentum used in this way is more than a reinforcement. Its value lies rather in its inherent properties, for it heals more quickly than other body tissues; then, too, it has a tendency to insinuate itself into tiny nooks and crannies, thus sealing them up in a most satisfactory and efficacious manner.

5 Anderson Street.

* From the laboratory of physiologic chemistry, Tulane University School of Medicine.

1. Denis, W., and Silverman, D. N.: Am. J. M. Sc. **169**: 25 (Jan.) 1925.

2. This set is made by the Lamotte Chemical Products Company, Baltimore.

Ulcer and Cancer.—Many cases of cancer of the stomach could be prevented by earlier and better treatment of chronic gastric ulcer, which is the main precursor of gastric cancer. —Rowlands, R. P.: *Brit. M. J.* **1**:58 (March 28) 1925.

Special Article

THE ART AND PRACTICE OF MEDICAL WRITING

IX. CHARTS AND TABLES *

GEORGE H. SIMMONS, M.D.
Editor and General Manager Emeritus, American Medical Association
AND
MORRIS FISHBEIN, M.D.
Editor, The Journal of the American Medical Association
CHICAGO

(Continued from page 1421)

Graphic methods of presentation add greatly to the interest of scientific papers. Through charts and tables, almost at first glance, the reader may obtain an understanding of the salient features that he might secure only with difficulty from the complete text.

CHARTS

Charts and graphs usually are prepared for exhibition at meetings before which the physician presents his thesis. In preparing such charts, it is well to bear in mind that they are to be seen from a distance; consequently, they should be simple, clear and of ample size, with large letters and heavy lines. Letters for pasting on such charts may be purchased.

If charts are to be published, it is desirable that the various lines be differentiated by their composition, rather than by the use of different colors. For this purpose, lines may be heavy, light, continuous, broken,

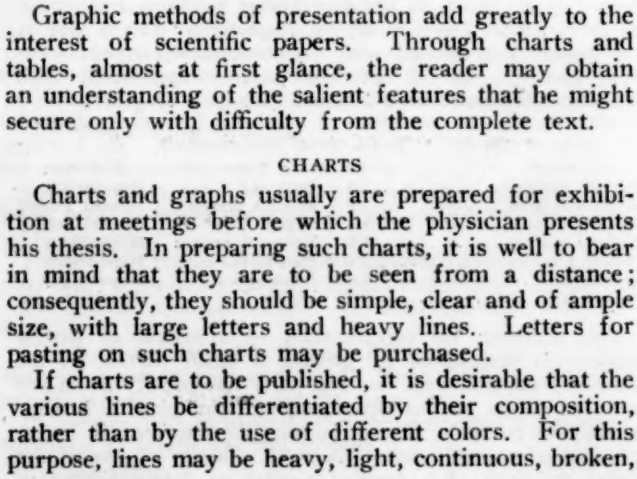

Chart 1.—A badly made chart. Nine rows of squares not occupied by the curve have been left at the top, and twenty-two rows to the right. These squares have been written on and thus constitute a part of the chart; otherwise they might have been eliminated in making the plate. This large amount of waste space has caused the chart to be unnecessarily cramped in being reduced to column width. If this space had been omitted, the chart could have been reproduced on a scale making the squares half as large again, as in Chart 2, and the chart much clearer. As the leukocyte count did not extend above 27,000, the upper border of the chart should have been placed at this point, and the "28,000" omitted. Writing on charts should be avoided. In this chart the writing obscures the highest part of the leukocyte curve, and the enforced reduction of the size of the chart has made the words practically illegible. That writing can be avoided is shown by Chart 2, in which single letters of reference take the place of the descriptions, while the latter appear in the legend, where they belong.

or composed of dots, of dots and dashes, and of dots, circles and dashes.

Much of the paper sold for charting purposes has green, brown, light blue or light red cross-rulings. Such colors will not reproduce satisfactorily in connection with black lines in the simple photo-engraving process. The American Medical Association has prepared chart paper ruled in black, with squares of various sizes, which is supplied to authors at cost.

Charts should be condensed as much as possible to permit of reproduction with the least possible reduction. Waste space is avoided by bringing the borders down or up close to the curves at all points, and by eliminating from the surface of the chart unimportant

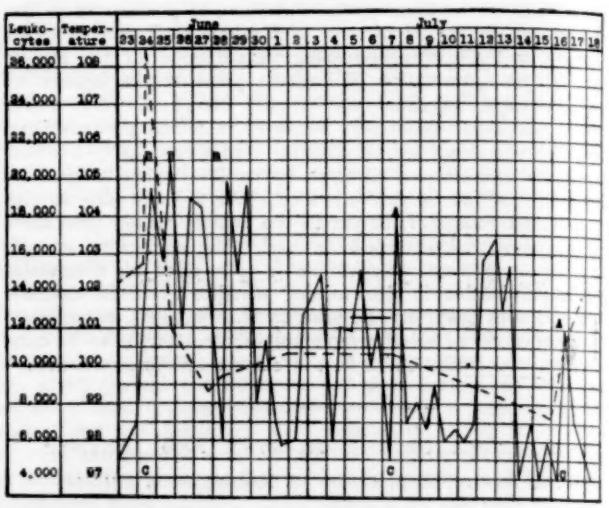

Chart 2.—Solid line, temperature; broken line, leukocytes; *A*, inoculation with 500 million homologous influenza bacilli; *B*, blood-culture, negative; *C*, chill.

This is the same chart shown in Chart 1, redrawn so as to avoid waste space. Much of the information on Chart 1 has been placed in the legend of Chart 2. The waste spaces at the top and to the right have been avoided, with the result that there is more room in the column width for the essentials, and the chart is more legible. Single letters have taken the place of the descriptions, which are placed in the legend.

or irrelevant data. If a temperature curve ranges from 97 to 104, it is unnecessary to reproduce the whole of a temperature chart made to show variations from 95 to 107. The temperature chart ordinarily used for the hospital record does not reproduce as satisfactorily as the chart prepared particularly to show the temperature, with the varying degrees indicated by printed letters on the left-hand margin. Words and sentences placed on the face of the chart, unless neatly printed, spoil its appearance; therefore it usually is better to place letters, numerals, asterisks or other indicating devices on the face of the chart and to explain them in the legend. Specimen charts are here reproduced which bring out this point clearly.

The same rules apply in the presentation of statistical data by the use of various shadings. Shading should be done in black and white, rather than in colors. For the purpose of contrast, solid black squares may be placed next to white squares, or next to squares filled with dots, with oblique lines or with circles. It is the rule of practically all periodicals that the author shall be asked to bear the extra expense of reproducing in colors charts in which the data could be as well presented in black and white. Specimen charts, graphs and diagrams, both satisfactory and unsatisfactory, will be included in the completed book.

TABLES

Data should be tabulated only when it is possible to present them more concretely in that form than in the text of the article. A cumbrous and unwieldly table defeats the purpose for which it is included, and is

* This is the ninth of a series of articles. When concluded, these papers, together with additional material, will be published in book form.

likely to be studied by but few readers. As tabular matter usually is handled on a separate typesetting machine, each table should be typewritten on a separate sheet of paper; thus, the tables may be given to the compositor without delaying the typesetting of the other material in the manuscript. For the sake of appearance, it is desirable, so far as possible, that a uniform style be followed in the preparation of the tables. If there is more than one table, they should be numbered consecutively throughout the manuscript, so as to be easily referred to in the text. Each should have a heading composed of the word "Table," followed by an arabic number indicating its sequence in the series, a period and a dash, and then a descriptive heading indicating the subject to which it is primarily devoted.

The headings at the top of the vertical columns should indicate the subjects chiefly concerned. The variations should be indicated by the left-hand column, in which can be given the period of the various observations, or the record numbers of the animals, cases or other objects to be contrasted. In other words, the vertical columns contain the like data.

It is of particular importance that tables be condensed as much as possible. Often a column can be condensed by incorporating in the heading a factor that is common to all the entries in the column. Again, a column that contains no variable factors may be eliminated, and the important point covered by a single footnote to the table. In fact, when there are only one or two variations in a table covering twenty-five or thirty items, it is frequently possible to use a footnote for each of the cases that vary, and in this way to cover the point to the satisfaction of the reader.

Footnotes to tables usually are indicated by an asterisk, dagger or similar reference mark, rather than by consecutive figures. Various sizes of type may occasionally be used to call especial attention to material within a table; but this, in general, is to be avoided because it involves difficulties of composition and make-up that are exceedingly expensive.

For purposes of condensation, it is desirable to use abbreviations in a table, whereas it would be quite undesirable to use these in the text. Standard abbreviations should be employed when such exist. If unusual abbreviations are used, they should be explained in a footnote to the table. (A list of standard abbreviations used in medical and scientific literature appears in the supplement to this volume.)

In preparing his table, the author should bear in mind the page size of the periodical in which it is to appear. For example, a table prepared for THE JOURNAL may have a width of 6¾ inches when printed across the page, and, in unusual instances, of 10 inches when printed up and down on the page. Obviously, it is to the advantage of the author and of the reader to have the table prepared so that it may be printed upright; only in rare instances do editors arrange for the insertion of tables on their side. In the special periodicals published by the American Medical Association, tables may have a width of 5½ inches or of 8¼ inches, according to the manner of printing. In rare instances when statistical data cannot be presented in any other manner, it is possible to make exceedingly large tables, which are folded and inserted in the periodical after the forms are assembled. This, however, is a costly hand process, and it is customary for periodicals to ask authors to bear the extra expense entailed by it. In special instances, also, arrangements are made to spread a table across two facing pages, thus avoiding duplication of headings. Again, however, this is not generally desirable, as it involves difficulty in arranging the article in consecutive order in the pages.

Vertical rules should be used in tables in preference to cross rules. The former are inserted without great difficulty, whereas the latter frequently involve composition that is difficult and time consuming.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

LUNOSOL.—Argenti Chloridum Colloidale Saccharatum-Hille.—A preparation of colloidal silver chloride containing silver chloride, 10 per cent., and sucrose, 90 per cent.

Actions and Uses.—Lunosol has antiseptic and germicidal properties. It causes neither irritation of the mucous membranes nor coagulation of albumin even in concentrated solutions; it does not stain the skin.

Lunosol is intended for the prophylaxis against and treatment of infections of the accessible mucous membranes, such as the genito-urinary tract and the eye, ear, nose and throat.

Dosage.—Lunosol is generally used in solutions (colloidal suspensions) of from 1 to 25 per cent. In the male urethra, from 3 to 25 per cent. solutions are used; for irrigation of the vagina, a 1 per cent. solution is used, and on tampons, a 10 per cent. solution; for irrigation of the bladder, a 0.1 to 1 per cent. solution, and for irrigation of the rectum, a 1 to 5 per cent. solution is used; in ophthalmia neonatorum, 25 to 50 per cent. solutions are applied; in pyelitis, 3 to 10 per cent. solutions are injected into the kidney pelvis; for application to the nose, eye and ear, the average concentration is 10 per cent.

Manufactured by Hille Laboratories, Inc., Chicago. No U. S. patent. U. S. trademark 189,347.

Lunosol Capsules, 6 grains.

Lunosol is a white, slightly hygroscopic, granular powder, odorless, having a sweetish, metallic taste. It is completely soluble in one half of its weight of water, forming an opalescent solution (colloidal suspension) which is bluish white in reflected light and reddish in transmitted light.

If a solution of 0.5 Gm. of lunosol in 25 Cc. of water is treated with 0.6 Gm. of potassium iodide dissolved in a few Cc. of water, a yellow liquid is formed. If 5 Gm. of lunosol is dissolved in 25 Cc. of water and 8 Cc. of stronger ammonia water is added, a clear, colorless solution results. If a solution of 0.5 Gm. of lunosol in 10 Cc. of water is treated with 15 Cc. of tenth-normal sodium thiosulphate, a clear colorless solution results. Place a few drops of lunosol solution (1: 10) in the nostril: no sensation of irritation is produced. To about 2 Cc. of fresh undiluted egg white, add 1 Cc. of lunosol solution (1: 10); shake the mixture, then allow to stand for fifteen minutes and finally dilute with 15 Cc. of water: no precipitate forms.

Dissolve approximately 0.5 Gm. of lunosol, accurately weighed, in 25 Cc. of water, add 8 Cc. of stronger ammonia water followed by an excess of hydrochloric acid. Collect, wash, dry and weigh the precipitate. The weight of silver chloride found corresponds to a content of 10 per cent. of silver chloride in the specimen taken.

ANTIRABIC VACCINE (See New and Nonofficial Remedies, 1924, p. 306).

Cutter Laboratory, Berkeley, Calif.

Rabies Vaccine (Semple).—An antirabic vaccine prepared according to the general method of David Semple (phenol killed). The brains of rabbits killed on the sixth day after inoculation with fixed virus rabies are ground in a mortar with physiological solution of sodium chloride containing 1 per cent. of phenol to yield a 2 per cent. suspension of brain substance. The mixture is strained, incubated at 37 C. for twenty-four hours and then diluted with an equal volume of physiological solution of sodium chloride so that the finished product contains 1 per cent. of brain substance. Marketed in packages of seven syringes, each containing 2.5 Cc. The content of a syringe is administered daily over a period of from fourteen to twenty-eight days according to the severity of the case.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 16, 1925

SUNLIGHT AND HELIOTHERAPY

"Sol est remediorum maximum." These are the words in which the elder Pliny ascribed a great remedial potency to the sun's rays. His dictum merely embodies, in the form of what would nowadays be termed a slogan, the long held belief in the value of the sun in curing and preventing disease. Generations of laymen as well as physicians have somehow assumed that part of the undoubted beneficial effects of an outdoor life is attributable to sunshine. The Greeks had their helioses and the Romans their solaria; yet heliotherapy has as yet scarcely emerged from the most empiric of performances into the dignity of a scientifically justified or rationalized procedure.

The pioneer experiences of Finsen with radiant therapy, and particularly the successes that Rollier and others have achieved by employing the direct rays of the sun in the treatment of certain types of local tuberculosis, naturally forced more serious attention to the problems involved. The discovery of the bactericidal action of light gave a possible clue for further investigations. Under suitable conditions, ultraviolet rays are capable of killing bacteria and protozoa in water in a few seconds. Such facts suggested that part, at least, of the benefit of sunlight might be microbicidal in character. Again, it was argued that the erythema of the skin and increased metabolism in it set up by sunlight may be most important in keeping up the immunity to disease, acting like a vaccine when injected subcutaneously, stirring up the mechanisms that defend against cutaneous injury.[1]

An entirely fresh impetus to the study of the subject has been derived from investigations of the biologic actions of light, particularly as they are related to dietary deficiencies. It is now clearly established [2] that exposure to ultraviolet radiations as supplied either by direct sunlight or by various forms of special lamps will protect both animals and man against the effects of lack of antirachitic factors usually supplied by an adequate diet. Ultraviolet rays act curatively in rickets as well as prophylactically. Furthermore, certain foods can acquire antirachitic properties through being irradiated. According to Hess [3] and his co-workers, when vegetable oils are activated by means of ultraviolet radiation, the antirachitic factor is confined to the nonsaponifiable fraction. Further investigation has demonstrated that phytosterol obtained from these oils, although unable to protect against rickets, can in the same way be endowed with antirachitic potency.

Investigators acting under the auspices of the Medical Research Council of Great Britain gained the impression not long ago that even air exposed to ultraviolet radiations may acquire a comparable physiologic potency. This would be a remarkable phenomenon susceptible of extensive applications if the evidence were well supported. Renewed investigations in London [4] and particularly by Nelson and Steenbock [5] at the University of Wisconsin have failed to substantiate the assumptions regarding the irradiated air. No valid evidence was obtained to show that irradiation with ultraviolet light will confer growth-promoting or antirachitic properties on air. Experience shows, however, that ingestion of activated materials (food residues or excreta) suffice to explain the earlier startling findings. At any rate, the potency of radiation is sufficiently striking without the added glamour of a postulated potent atmosphere. The story of radium and its emanations has led us to expect too much from a single discovery.

Recent experiments on the effect of radiation on the bactericidal power of the blood [6] indicate that exposure of the skin of animals to a source of ultraviolet radiation gives an increased bactericidal power to the blood and serum. Other agencies intense enough to produce inflammation of the skin, as heat rays and mustard poultices, had the same effect. Similar results were obtained by irradiation of the human skin. Studies of the effects of irradiation of blood in vitro have indicated that exposure to a source of ultraviolet radiations destroys its bactericidal properties. On the other hand, when this irradiated blood is passed into the blood circulation, an increase in bactericidal power is observed. In the investigations

1. The Science of Ventilation and Open Air Treatment, Part II, Medical Research Council, Special Report Series 52, London, H. M. Stationery Office, 1920.

2. The Photo-Activity of Substances Curative of Rickets—A Remarkable Discovery, editorial, J. A. M. A. **83**: 1169 (Oct. 11) 1924.

3. Hess, A. F.; Weinstock, Mildred; and Helman, F. D.: The Development of Antirachitic Potency in Phytosterol and Cholesterol Following Irradiation, Proc. Soc. Exper. Biol. & Med. **22**: 227 (Jan.) 1925; Oil Activated by Irradiation, II, Separation into an Antirachitic and an Inactive Fraction, ibid. **22**: 76 (Nov.) 1924.

4. Report of Medical Research Council for the Year 1923-1924, Committee of the Privy Council for Medical Research, London, H. M. Stationery Office, 1924, p. 65.

5. Nelson, E. M., and Steenbock, H.: Fat-Soluble Vitamins, XXI, Observations Bearing on the Alleged Induction of Growth-Promoting Properties in Air by Irradiation with Ultraviolet Light, J. Biol. Chem. **62**: 575 (Jan.) 1925.

6. Colebrook, Leonard; Eidinow, Albert; and Hill, Leonard: The Effect of Radiation on the Bactericidal Power of the Blood, Brit. J. Exper. Path. **5**: 54 (April) 1924.

of Hill and Colebrook[6] the rays from a carbon arc or a mercury vapor lamp, as well as certain heat rays, were found to raise the bactericidal efficiency of the subject's blood, this effect being referable to improved functions of the leukocytes. A similar improvement in the blood was found to occur after exposure to the alpine sun in winter. It is suggested that this enhanced power of the blood to kill microbes plays an important part in the beneficial action of sunlight on tuberculosis and other infections. In conformity with clinical experience, it has been found by experiment that irradiation for purposes of treatment must be carefully graded, since excessive exposures cause a deterioration of the blood no less striking than the improvement obtained with smaller doses. In connection with the studies by the Medical Research Council, it has been noted that more of the ultraviolet rays even on sunny days come from the sky as a whole than directly from the sun; this is particularly the case when the sun is low or obscured by cloud. This is a fact of practical importance in heliotherapy.

INSULIN AND THE CARBOHYDRATE METABOLISM OF THE MUSCLES

It was inevitable that when once the unique influence of insulin on carbohydrate metabolism was clearly established, investigators should be eager to discover the explanation of the phenomena involved. Probably the most striking manifestation of dosage with this hormone is the rapid decrease in the concentration of the blood sugar, which sets in so promptly that it early suggested some process occurring in the blood itself as responsible for the sugar-diminishing effect. Careful study of this has demonstrated conclusively that insulin does not influence the rate of glycolysis in blood; hence the hypoglycemia observed is not due to glycolysis. The liver, a storehouse of the sugar-forming glycogen, is not primarily concerned in the hypoglycemic action of insulin, for the characteristic effect of the latter continues even after exclusion of the hepatic tissues.[1] Consequently, in the attempts to determine the seat of action of insulin, attention has been directed to that mass of tissues most extensively concerned with the metabolism of carbohydrate, the muscles.

More than a year ago, Macleod,[2] who has guided some of the pioneer studies on this subject, felt forced by exclusion to conclude that insulin, after entering the blood, must pass into the tissues and set up in them some process that leads to the reduction in the amount of free glucose, thereby creating, as it were, a vacuum for this sugar, with the result that glucose is removed from the blood. Substantiating evidence identifying the muscles with the seat of this process is rapidly accumulating. It has been recognized for some time, on the basis of experiments, that there is a difference between the sugar content of arterial blood and that of venous origin. This is true even in eviscerated animals. The venous blood is uniformly lower in sugar content, suggesting a utilization or at any rate a withdrawal of the carbohydrate from the blood in the intervening capillaries that are for the most part involved in muscular tissue. The difference is accentuated when sugar is ingested so that a hyperglycemia results. The greatest difference between the arterial and venous blood sugar content is observed when insulin is given.

These facts apply to man also, according to the Coris.[3] They have observed that the difference between the cutaneous (arterial) blood of a finger tip and the blood from the cubital vein in normal persons averaged 5 mg. of sugar per hundred cubic centimeters of blood. After insulin injections, this average value was exceeded three times. The difference between arterial and venous blood sugar concentrations was also higher for diabetic patients who received insulin treatment than for untreated cases. Hence their experiments fortify the conclusion that insulin increases the rate at which sugar disappears from the blood into the muscles. What happens to the sugar still remains a matter of mere conjecture. Evidently the utilization of glucose must be preceded by its penetration into the tissue cells, and it is not improbable that the increased disappearance of sugar from the blood into the muscles is the result of an increased rate of metabolism of glucose in the muscles during the action of insulin. Perhaps, as the Coris suggest further, part of the sugar is oxidized and part utilized for synthetic processes.

THE PARATHYROID HORMONE

Among the endocrine glands that have been the subject of intensive investigation in recent years, the parathyroid structures have been the focus of much attention. The great importance that they have physiologically is out of all proportion to their small size. Removal of the fragments of tissue that constitute the parathyroid glands results in serious symptoms; and unless suitable therapy is vigorously instituted, death is certain to ensue. The outstanding manifestation resulting from extirpation of the parathyroids is tetany. The severity may range from a mere hyperexcitability of the nerves, which requires careful electrical tests to elicit its presence, to the severe symptoms designated as tetania parathyreopriva. It is the merit of recent biochemical research to have demonstrated clearly that in these conditions there is a pronounced change in the content of certain blood

1. Mann, F. C., and Magath, T. B.: Am. J. Physiol. **55**: 403 (July) 1923.
2. Macleod, J. J. R.: Insulin, Physiol. Rev. **4**: 21 (Jan.) 1924.
3. Cori, C. F., and Cori, Gerty T.: Comparative Study of the Sugar Concentration in Arterial and Venous Blood During Insulin Action, Am. J. Physiol. **71**: 688 (Feb.) 1925.

components. Greenwald [1] has summarized the latest information in the statement that there are two, and only two, well authenticated metabolic changes after parathyroidectomy. One is the lowered calcium content of the serum or plasma, and the other is the diminished excretion of phosphorus in the urine. These must be regarded as being intimately connected with the sequence of symptoms observed. The most successful procedures for treatment, such as feeding milk or administering calcium salts, are in accord with the considerations just presented.

Postoperative tetany has been relieved, even in man, by parathyroid grafting. This fact, in connection with other obvious considerations, has sponsored the belief that the parathyroid supplies an indispensable hormone to the body. The attempts to use desiccated gland substance or extracts in a replacement therapy have not, as a rule, been attended with success. Nevertheless, Collip of the Canadian University of Alberta at Edmonton, in summing up the theories of parathyroid function, believes that the balance swings in favor of a hormonic function having to do normally with the regulation of calcium metabolism through a specific control of blood calcium concentration.

Proceeding on this hypothesis, Collip [2] has succeeded in preparing extracts, by acid hydrolysis of parathyroid glands, that control or prevent the tetany in parathyroidectomized animals, and permit them to live. The active principle in this extract produces its effect by causing the calcium content of the blood serum to be restored within normal limits. A close parallelism has been observed between the clinical condition of experimental animals and the calcium content of the blood serum. Coincident with the marked improvement observed after the use of the active extract, a rise in blood calcium has been noted. It has been quite conclusively shown that the extract may be effective by the oral route. It is felt, however, that the best results are to be obtained by subcutaneous injection; that is, that the full effect of small doses is better elicited by this mode of administration of the hormone. So far as one can judge at the present stage of the study, Collip's work represents an outstanding achievement worthy of one who has already made a splendid contribution to the technic of the isolation of insulin.

An important additional outcome of Collip's studies has been the discovery that overdosage with the active hormone extracts may push the rise of blood calcium to a condition of veritable hypercalcemia that may even become fatal. The symptoms of hypercalcemia are anorexia, vomiting, apathy, drowsiness verging into coma, and a failing circulation. The blood becomes highly concentrated. These findings on animals, on the one hand, warn against careless applications of the new discovery to man, and, on the other, extol the advantage of animal experimentation as a preliminary to human therapy. As Collip himself points out, it is possible that the newly found hormone may have many practical uses. Calcium metabolism enters into many medical problems. An agent is now at hand which influences profoundly the calcium metabolism. It must be recognized, however, that the parathyroid hormone is a most potent therapeutic agent, and that its use may be attended with great danger unless due precautions are taken to avoid an overdose and the development of hypercalcemia. It may be that a condition of mild hypercalcemia would be of definite benefit in certain conditions. Only by careful clinical studies, however, will the ultimate merits or demerits of this hormone be determined.

1. Greenwald, I.: Are Guanidines Present in the Urines of Parathyroidectomized Dogs? J. Biol. Chem. **59**: 337 (March) 1924.
2. Collip, J. B.: The Extraction of a Parathyroid Hormone Which Will Prevent or Control Parathyroid Tetany and Which Regulates the Level of Blood Calcium, J. Biol. Chem. **63**: 395 (March) 1925.

Current Comment

THE SPHINCTER OF THE BILE DUCT

Although the bile is formed more or less continuously by the liver cells, it does not enter the intestine at the same rate. The muscular fibers forming the sphincter of Oddi at the papilla of Vater relax only at certain intervals, so that the orifice is patent intermittently. In general, the bile is discharged into the duodenum periodically during the time of digestion; at other times it backs up into the gallbladder to become concentrated by withdrawal of water in those species, like man, that possess such a storage organ. There is considerable evidence to show that the relaxation of the sphincter of Oddi and the attendant discharge of bile are facilitated by the introduction of digestion products into the duodenum. Such a reaction may occur with each gush of chyme through the pylorus from the stomach. Experimentally, bile flow has also been promoted by direct application of a variety of products, such as might occur in chyme, directly to the duodenal mucosa.[1] Cole [2] has recently demonstrated, at the department of surgery of Washington University, St. Louis, that the function of the sphincter of Oddi can largely be controlled by varying the alkali and acid content of the stomach as well as that of the duodenal contents. The hydrogen ion concentration is an important, if not the most important, factor in controlling the sphincter from the gastric side, since so little effect is seen from the use of substances other than alkali or acid. Distention of the stomach causes a very marked spasm of the sphincter. Alkalis in the stomach tend to produce a comparative result, thus also inhibiting biliary flow into the bowel. The most striking change in tonicity of the muscle fibers is seen when the gastric mucosa is treated with 0.5 per cent. sodium hydroxid. The exact mechanism of this behavior cannot be accurately explained. Obviously, Cole points out, it must be controlled by the sympathetic nervous system or by

1. Auster, L. S., and Crohn, B. B.: Physiology of the Gallbladder, Am. J. M. Sc. **164**: 345 (Sept.) 1922.
2. Cole, W. H.: Relation of Gastric Content to the Physiology of the Common Duct Sphincter, Am. J. Physiol. **72**: 39 (March) 1925.

hormonic action through the blood stream. The reactions, especially to alkali, he adds, are so immediate that it would seem better explained by a nervous mechanism. It must seem strange to the uninitiated reader that many of the most fundamental physiologic reactions of the body, such as those of the alimentary organs, have so long remained inadequately known.

THE BEHAVIOR OF CARBON TETRACHLORID IN THE BODY

The occurrence of parasitic "worms" of varied sorts in the human body has long furnished problems of importance for practical therapeutics; but to the widespread interest developed in more recent times in the distribution of hookworms and their bearing on the welfare of thousands of persons is due the detailed attention that is at present being devoted to helminthiasis and anthelmintic measures. Until recently, the usual remedy for use against hookworm was thymol. This was supplanted in large measure by oil of chenopodium, on the general belief that it is somewhat more effective than thymol, that it is cheaper, and that it is, if anything, less dangerous to the patient. The source of the supply is readily available. Oil of chenopodium has also been used against intestinal amebiasis. The newest contender in the list of the vermifuge drugs is carbon tetrachlorid, a substance which is comparatively inexpensive and which has already found widespread use for various domestic purposes. Carbon tetrachlorid has narcotic and anesthetic properties somewhat similar to those of chloroform. It also removes some intestinal parasites other than the hookworm, such as *Oxyuris vermicularis, Ascaris lumbricoides* and *Tricocephalus dispar;* but it is less effective against these worms than are some other drugs, such as oil of chenopodium. The Council on Pharmacy and Chemistry has established standards for carbon tetrachlorid, and several brands of satisfactory quality for human medicinal use have been admitted to New and Nonofficial Remedies. It is highly important that we should become well informed regarding the physiologic behavior as well as the therapeutic virtues of drugs that are likely to find widespread employment by man. All too often the enthusiasm for a potent and apparently desirable substance leads to hasty indifference to its possible shortcomings or actual dangers. Most vermifuges deserve at best to be classed only as relatively safe drugs. Hence the importance of the information that is being supplied by Wells[1] of the Johns Hopkins Medical School regarding the absorption and excretion of carbon tetrachlorid. Alcohol in sufficient concentration markedly accelerates its disappearance from the bowel. The results of experiments suggest that the rate of absorption in man depends on the concentration of the drug in the small intestine. Of course, what is primarily desired is not hasty disappearance from the bowel, but prolonged stay there where it can directly act on the parasites. It is suggested by Wells, in the light of the effect that the concentration seems to have on the rate of absorption, that, should the drug be administered in divided doses, the concentration reaching the tissues would be reduced and the time during which the drug remains in the intestine prolonged. By such a method of administration of the drug, the toxicity might be considerably reduced for selected patients in whom the factor of safety would outweigh that of ease of administration. Perhaps the largest item of new interest in Wells' studies is the demonstration that, like various other volatile compounds, carbon tetrachlorid is eliminated readily through the lungs, so that these organs may ordinarily afford the main channel of escape for whatever of the drug is actually absorbed. This is a fact of no small importance when toxicity must be dealt with.

1. Wells, H. S.: The Absorption and Excretion of Carbon Tetrachloride in Animals and Man, Proc. Soc. Exper. Biol. & Med. 22: 235 (Jan.) 1925.

PRESIDENT OF BRITISH MEDICAL ASSOCIATION VISITS AMERICA

The president of the British Medical Association, Mr. J. Basil Hall, visited the headquarters of the American Medical Association, May 11. He is in this country as official delegate of the British Medical Association to the Annual Session. Mr. Hall has the degrees M.A., M.C. (Camb.), F.R.C.S. (Edin.); he is consulting surgeon to the Bradford Royal Infirmary and has the title J.P. for Bradford. He was elected president of the British Medical Association at its meeting in Portsmouth in 1923, and delivered his presidential address at the meeting in Bradford in 1924. In this address, he emphasized the changing status of the physician and devoted much of his discussion to the story of the discovery of anesthesia by American investigators. He called for a return to the type of physical diagnosis used by the general practitioner, emphasizing that "clinical observation threatens to become a lost art." He insisted that "our present failing is an overconfidence in modern technic and a lack of appreciation of the value of that wisdom which can only be obtained by personal observation and experience." "Our scientific knowledge has been greatly advanced," he said, "but knowledge avails us very little unless we cultivate the wisdom to gage its practical value and apply it carefully." At a time when the American medical profession is concerned with similar problems, we are exceptionally fortunate in the visit of a British confrère with a real sympathy for the problems of the general practitioner.

THE PAIN OF GASTRIC ULCER

Relief from the epigastric distress associated with chronic peptic ulcer is usually secured by eating, by emptying the stomach, or by the administration of alkalis. The rationalization of treatment as diverse as this must depend on a knowledge of the immediate occasion of the pain and the mechanism concerned in its genesis. The suggestion most commonly quoted at present makes active peristalsis responsible for the sensation of marked discomfort. Thus, it has been concluded that the peristaltic contractions are felt as pain when the ulcer is in an "irritable state," whereas similar peristalsis may proceed without conscious sen-

sations at other times when the tissues are less irritable. The cogency of such an explanation must depend in large measure on the evidence that peristalsis and pain demonstrably occur and cease simultaneously. Ortmayer,[1] who has investigated this aspect of the subject experimentally in human patients, remarks that any theory of motor phenomena as the cause of pain in ulcer, except that of continuous localized spasm, is at variance with the clinical observation that the distress of ulcer, when present, is usually continuous. The patient himself often describes his pain as gnawing or boring, not as a "spasm." Ortmayer's own observations of gastric movements recorded by the balloon method give no evidence that sodium bicarbonate and calcium carbonate, for example, relieve the pain of ulcer through lowering tension or tone or through decreasing peristalsis of the stomach, so far as either of these factors can be recorded by the procedure used. She says that it has always been difficult to explain the quick, unfailing relief to the pain of peptic ulcer obtained by giving a sufficient quantity of neutralizer, by emptying the stomach, or by eating on the basis of motor activity alone; for rapid simultaneous changes in the gastric motor activities are not observed. Hence one must still remain skeptical toward the conclusion that peristalsis causes the characteristic pain of gastric ulcer, even though it may be somewhat discomforting to an inquisitive generation to continue to employ modes of treatment that are empirically effective though scientifically inexplicable.

1. Ortmayer, M.: Gastric Motor Activity in Patients with Peptic Ulcer, Arch. Int. Med. 35: 423 (April) 1925.

Association News

THE ATLANTIC CITY SESSION

University of Louisville Alumni Dinner

There will be an informal dinner of the Alumni of the University of Louisville at the Hotel Ambassador, Wednesday evening, May 27, at 7 o'clock. For reservation write Dr. C. Coulter Charlton, 124 South Illinois Avenue, Atlantic City.

Alpha Epsilon Iota Luncheon

The Alpha Epsilon Iota National Fraternity for Medical Women will have a luncheon at the Hotel Ambassador, Wednesday, May 27, at 1 o'clock. For reservation write Miss Mary Noble, 2023 North College Street, Philadelphia.

University of Pennsylvania Alumni

Announcement is made of a smoker for alumni of the medical department of the University of Pennsylvania, to be held in Atlantic City, Wednesday, May 27. The place and time of the smoker will be announced in the *Daily Bulletin*.

Annual Banquet of Alpha Omega Alpha

The annual banquet of the Alpha Omega Alpha will be held at the Ambassador Hotel, Atlantic City, Thursday evening, May 28, at 6:30; price, $5 per plate. The meeting will adjourn promptly at 9 o'clock to permit attendance at the President's reception, which will be held at the same hotel. Reservations should be made for the banquet with the secretary, Dr. W. W. Root, at Atlantic City during the session.

Alpha Mu Pi Omega

The biennial meeting of Alpha Mu Pi Omega Medical Fraternity will be held at the Hotel Traymore, May 27, at 4 p. m.

A smoker will be held at Alpha Chapter House, A. M. P. O., 215 South McAlpine Street, Thirty-Sixth and Locust, Philadelphia, May 29.

Travel Study Club of American Physicians

The Travel Study Club of American Physicians will hold its ninth annual reunion and luncheon, Tuesday, May 26, at 1 p. m., at the Hotel Strand, Atlantic City. For further information address the secretary, Dr. Richard Kovacs, 223 East Sixty-Eighth Street, New York City.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Seth M. Wells Sentenced.—Dr. Seth M. Wells, whose license to practice medicine in Utah was revoked in 1910, was convicted, April 8, at Los Angeles, of fraud in an oil promotion scheme and was sentenced to pay a fine of $1,000 and to serve one year in the county jail on each of two counts, it is reported. Stay of execution was granted for thirty days to enable his attorneys to file an appeal. Wells used to be an itinerant in Illinois. His Illinois license was revoked in 1912.

COLORADO

State Board Election.—Dr. Charles W. Thompson, Pueblo, has been elected president of the state board of health to succeed Dr. George K. Olmsted, Denver, and Dr. Samuel R. McKelvey, Denver, secretary, to succeed Dr. Tracy R. Love, Denver.

IDAHO

Hospital News.—A twenty-eight room hospital, with modern equipment, is being built at Lava Hot Springs at a cost of $50,000. The people of Lava Hot Springs are financing the institution.

Personal.—Dr. Ellis Kackley, Pocatello, has been appointed surgeon in charge of the municipal sanatorium that is being built in that city.——Dr. Clamor H. Gavin, Idaho Falls, has been commissioned assistant surgeon, with the rank of lieutenant in the medical corps of the U. S. Navy.——Dr. Clifford M. Kaley has assumed the office of mayor of Caldwell, having been nominated without opposition.——Dr. John E. Langenwalter, Twin Falls, has been appointed county physician, to succeed Dr. Charles D. Weaver.

ILLINOIS

Diamond Jubilee.—The current issue of the *Quincy Medical Bulletin* is dedicated to the diamond jubilee celebration of the Illinois State Medical Society and the Adams County Society, both of which were founded in 1850, to be held in Quincy, May 19-21. It contains the program in detail, the list of exhibitors, a descriptive directory of the city of Quincy, and a brief history of the Adams County Medical Society and the state medical society, with short bibliographies and halftones of the early officials. There is also a hitherto unpublished paper on the cholera epidemic of 1849-1851 by the late Dr. Francis Drude, who was president of the Adams County Medical Society in 1881 and 1882, besides a list of members of the society and descriptive pages of hospitals and laboratories in Adams County.

Society News.—Dr. Willis B. Young, St. Louis, addressed the Madison County Medical Society, Edwardsville, May 1, on "Large Ovarian Cysts."——The Central Illinois Radiological Society will meet in Quincy, May 19, in conjunction with the annual session of the Illinois State Medical Association. Among those on the program are Dr. Henry Schmitz, Chicago, whose subject will be "The Diagnosis and Treatment of Carcinoma of the Cervix"; Dr. Sherwood Moore, St. Louis, "A Discussion of Cholecystography," and Dr. Edward L. Jenkinson, Chicago, "Visualization of the Gallbladder by

Dye—Preliminary Report."——The Wilmette Physicians' Club held its sixteenth annual banquet at the North Shore Health Resort, May 14.——Dr. Dean Lewis, Chicago, was the guest of honor at an informal dinner, April 23, given by the Knox County Medical Society, Galesburg. Dr. Lewis addressed the society on "Diagnosis of Abdominal Lesions"; Dr. George F. Dick, Chicago, on "Scarlet Fever," and Dr. Walter W. Hamburger, Chicago, on "Acute Indigestion."

Chicago

Northwestern's New Campus Started.—Ground was broken, May 8, for the construction of five of the six buildings that will house Northwestern University's schools, to be erected at a cost of $5,350,000, on McKinlock Memorial Campus at Lake Shore Drive and Chicago Avenue. Among the speakers at the ceremony were Mayor Dever of Chicago; Robert W. Campbell, president of the board of trustees; Elbert H. Gary, of the U. S. Steel Corporation, and Walter Dill Scott, president of the university. Those who made possible the construction of the buildings are: Mrs. Montgomery Ward, who gave $3,000,000, for the medical-dental center; Mrs. Levy Mayer, $500,000 for the law school building; William A. Wieboldt, representing the Wieboldt Foundation, $500,000, to complete the school of commerce; George A. McKinlock, $500,000, which made possible the purchase of the campus; Mrs. George R. Thorne, $250,000, to erect an auditorium, and Elbert H. Gary, $100,000 for the Gary Law Library.

Society News.—Dr. William C. Woodward, executive secretary of the Bureau of Legal Medicine and Legislation, American Medical Association, addressed the Chicago Society of Industrial Medicine and Surgery, May 4, on "The Medical Profession and Workmen's Compensation Laws."——Dr. J. Basil Hall, president, British Medical Association, addressed the Chicago Medical Society, May 13, on "Abdominal Surgery"; Dr. Albert J. Ochsner on "The Treatment of Acute Abdominal Conditions," and Dr. Allen B. Kanavel on "The Diagnosis of Acute Surgical Abdominal Lesions." A dinner in honor of Dr. Hall was given at the Hamilton Club preceding the meeting.——The last meeting of the Chicago Ophthalmological Society will be Monday, May 18, at the Hotel Sherman, when there will be a large number of patients exhibited from 5 to 6:30 o'clock, followed by a dinner in the gray room, and, at 7:30, an address by Dr. Forrest J. Pinkerton, Honolulu, on "Eye Complications of Leprosy." There will also be discussions on glaucoma by Drs. Harry W. Woodruff, Joliet, Ill., Ephraim K. Findlay and Marshall Goldenberg, and another by Drs. Edward V. L. Brown and Hallard R. Beard.

University of Chicago School of Medicine.—Ground was broken, May 7, for the first of the new buildings for the School of Medicine of the University of Chicago. Dr. Frank Billings, Chicago, turned the first sod. There will be constructed as fast as possible buildings costing more than $4,500,000. The units will be: (1) the Albert Merritt Billings Memorial Hospital, facing south on Fifty-Ninth Street, between Ellis and Drexel avenues, which will have a capacity of 200 patients and cost about $2,000,000; (2) the Epstein Dispensary, having an entrance on Fifty-Ninth Street, costing about $200,000; (3) the Medical Building, immediately north of, and adjoining the hospital and dispensary, costing about $450,000; (4) the Surgical Building, north of and adjoining the hospital, costing about $400,000; (5) the Pathology Building, between the surgical and medical buildings, costing about $650,000; (6) the Physiology Building, in the same block, fronting on Fifty-Eighth Street, to cost about $425,000, and (7) the building for physiological chemistry and pharmacology, to adjoin the physiology building, and cost about $425,000. Land has been set aside for buildings for special branches, such as psychiatry and obstetrics when funds are available. When the buildings now begun are complete, there will be a center for medical education, in which work leading to the M.D. degree and opportunities for research will be given. In the Rush College group on the west side, comprising the Rawson Laboratory of Medicine and Surgery, Senn Hall and affiliated institutions, postgraduate instruction and research will be pursued. The Billings Memorial Hospital, to be erected with funds from relatives as a memorial to the late Albert Merritt Billings, and the Epstein Dispensary, the gift of Mr. Max Epstein, are expected to be ready for patients in 1927. The buildings will be of Indiana limestone and of Gothic architecture. Dr. Dallas B. Phemister of Rush Medical College will be professor of surgery; Dr. Franklin C. McLean, professor of medicine, and Dr. Ralph B. Seem, director of the hospital. The department of pathology and the Otho S. A. Sprague Institute are headed by Dr. H. G. Wells; the department of physiology by Dr. A. J. Carlson, and the department of physiologic chemistry and pharmacology by Fred C. Koch, Ph.D.

LOUISIANA

Resolution of State Board of Health.—Recent antinarcotic activities having closed the sources of supply to many addicts, the state board of health passed the following resolution, May 1, to assist physicians to determine those cases which are deserving:

Resolved, That for the information and advice of the physicians, the following summary is offered:

1. The position of the American Medical Association is hereby reiterated, namely, that the ambulatory treatment of drug addicts is disapproved.

2. An application for drugs by an ambulatory case is prima facie evidence of illegal use, except in rare instances, such as states of severe pain due to cancer of advanced and inoperable stage.

3. Addicts carrying and displaying certificates of doctors as to their condition should be looked on, except in very rare instances, as mentioned above, as ordinary addicts. These certificates are scattered all over the state; they have been both purchased and forged; very few are genuinely proper. Look on every certificate with the keenest suspicion.

4. No doctor should, nor is authorized to accept any certificate of another doctor, as his grounds for prescribing narcotic drugs. A doctor's administration of a narcotic is on his own personal responsibility; and on the evidence of his own personal examination, when he assumes this dangerous responsibility.

WHEREAS, Information in possession of this board is conclusive that the facts growing out of investigations in regard to the narcotic situation by the president of the state board of health give unmistakable evidence of the illegal dispensing of narcotic drugs, and

WHEREAS, The president of this board, cooperating with the federal government, has made every reasonable and proper effort to curb this illegal traffic, and

WHEREAS, These efforts have not been received with anything like the degree of loyal support and respect on the part of the Shreveport Medical Society, especially, and

WHEREAS, The main facts are that the Shreveport Narcotic Clinic was twice reopened after it had been closed by orders of the federal government and the state board of health, and

WHEREAS, The Shreveport Medical Society twice endorsed same because of what, in our opinion, was an erroneous idea as to the conduct of the work of the clinic; therefore be it

Resolved, That we heartily endorse the activities of the president of this board in clearing up the abuses of the narcotic laws in Shreveport and other portions of the state, that we approve the course pursued in attempting to secure the cooperation of the Shreveport Medical Society, that we concur in the plans of the president of the board for continuation of his efforts along these lines, and that we pledge the full resources of the board in cooperation with the federal agents and in the enforcement of Act 252 of 1918 of the state of Louisiana.

MARYLAND

Personal.—Dr. William H. Welch, director, School of Hygiene and Public Health, Johns Hopkins University, was the principal speaker at the Tudor-Stuart Club of Johns Hopkins University, April 25, in Gilman Hall. The club was founded in 1918 by Sir William and Lady Osler in memory of their son.——Dr. Ira Remsen, emeritus president and emeritus professor of chemistry, Johns Hopkins University, Baltimore, has been made an honorary member of the American Chemical Society.——Dr. Henry Mills Hurd, first superintendent of Johns Hopkins Hospital, celebrated his eighty-second birthday, May 3, at his home in Baltimore. Dr. Hurd is in excellent health, with the exception of failing eyesight, and is working on a history of the Johns Hopkins Hospital.——Dr. Dean Lewis, Chicago, newly appointed professor of surgery at the Johns Hopkins Medical School, visited the hospital, May 6, to become acquainted with the medical staff.——Dr. Edward F. Malone, formerly of Baltimore, has received the title of Francis Brunning professor of anatomy at the University of Cincinnati. Dr. Malone graduated from the Johns Hopkins Medical School in 1907 and then became clinical assistant and resident at the Sheppard and Enoch Pratt Hospital, Towson, Md. After three years' study in Berlin, he went to the University of Cincinnati College of Medicine, where he has remained.

MASSACHUSETTS

Director of Medical Inspection Appointed.—Dr. John A. Ceconi, Boston, was appointed director of medical inspection in the Boston public schools, April 27. Dr. Ceconi in 1906 was appointed medical inspector in the Boston schools. In 1913 he was appointed medical inspector and diagnostician in the Boston Health Department; in 1919 epidemiologist in the Boston Health Department, and in 1922 director of the bureau of communicable diseases. Dr. Ceconi was born in Boston in 1881.

MICHIGAN

Section Meetings Abolished.—The state medical society will hold its annual meeting in Muskegon, September 8-10. An innovation will be introduced this year in abolishing section meetings. Two days of the session will be devoted to clinical talks and demonstrations consisting of half hour periods for each subject. One evening meeting will be open to the public, during which two addresses will be delivered on popular medical subjects.

Butterworth Hospital Dedication.—Dr. Ray Lyman Wilbur, president of Stanford University, will deliver an address at the dedication of the New Butterworth Hospital, Grand Rapids, May 20. The hospital, completed at a cost of about $1,500,000 and providing 270 beds, will open for patients the last week in May. Dr. William A. Evans, Chicago, and Dr. Sigismund Goldwater, New York, the consulting architect, will also deliver addresses. A physician and ten interns will comprise the resident staff. Dr. Hugh Cabot, dean of the University of Michigan Medical Department, addressed the Kent County Medical Society at the new hospital, May 15.

MINNESOTA

State Medical Election.—At the annual meeting of the Minnesota State Medical Association, April 27-29, Minneapolis, Dr. Herman M. Johnson, Dawson, was elected president; Drs. William F. Braasch, Rochester, Arthur N. Collins, Duluth, and Eugene G. McKeown, Pipestone, vice presidents; Dr. Edward A. Meyerding, St. Paul, secretary, and Dr. Earle R. Hare, Minneapolis, treasurer. The next meeting will be at St. Paul in October, 1926.

Governor Signs Sterilization Bill.—The governor has signed the bill passed by the last legislature which provides for the sterilization of the feebleminded and insane. When any person has been lawfully committed to the state school for feebleminded or to a state hospital for the insane, the state board of control may, after a careful investigation of the circumstances and consultation with the superintendent of the school or hospital, a reputable physician and a psychologist, selected by the board, with the written consent of the patient and nearest relative or the duly appointed guardian, cause such person to be sterilized by the operation of vasectomy or tubectomy. A complete record of the case shall be kept as a permanent file in the office of the board, and sterilization under the act shall not render the board of control or any person participating in the operation liable either civilly or criminally.

MISSOURI

State Medical Election.—At the sixty-eighth annual meeting of the Missouri State Medical Association, Kansas City, May 6, Dr. Emmett P. North, St. Louis, was elected president; Drs. Edgar A. Dulin, Nevada, Horace W. Carle, St. Joseph, Charles H. Dixon, Moberly, Alfred R. Rowe, Poplar Bluff, and Charles B. Trader, Sedalia, vice presidents; Dr. Edward J. Goodwin, St. Louis, secretary, and Dr. George W. Hawkins, Salisbury, treasurer.

NEW MEXICO

Society News.—At the forty-third annual meeting of the New Mexico Medical Association, May 19-21, at Clovis, under the presidency of Dr. Dudley B. Williams, Santa Fe, among others, Dr. Paul Gallagher, El Paso, Texas, will discuss "The Therapeutic Action of Analin Dyes"; Dr. Orville H. Brown, Bisbee, Ariz., "Allergy and Asthma"; Dr. James Vance, El Paso, Texas, "The Diagnosis and Surgical Treatment of Gallbladder Diseases"; Dr. Charles W. Thompson, Pueblo, Colo., "Mental Hygiene," and Dr. John W. Cathcart, El Paso, Texas, "Radiation in Malignancy of the Breast and Uterus." The general meetings will be in the high school auditorium. The house of delegates will meet at 11 o'clock, May 19. There will be a public meeting at 8 p. m., addressed by Dr. William H. Jenkins, Denver, on "Smallpox and Vaccination." The council will meet at 8:30 a. m., and the president's reception and dance will be at 8 p. m., May 20.

NEW YORK

Fellowships in Extramural Psychiatry.—At a recent meeting of the executive committee of the National Committee for Mental Hygiene, fellowships for training in extramural psychiatry were granted to Dr. Bradford J. Murphey, Greystone Park, N. J., and Dr. Alva Gwin, Augusta, Me.

Milbank Demonstration Started.—A diagnostician, eight field nurses and a supervising nurse of the bureau of preventable diseases of the department of health were assigned to activities exclusively within the Bellevue-Yorkville district, May 1. This was the beginning of the Milbank Health Demonstration. The diagnosis, supervision, control of isolation and quarantine in communicable diseases and other work tending to diminish the death rate will be undertaken.

Venereal Disease Among the Poor.—The number of indigent patients treated at the forty-five venereal disease clinics in the state during 1924 was the largest since 1920, when the clinics were established. There were 4,743 patients admitted for treatment, 2,789 continued treatment from the year before and 3,594 who had discontinued treatment were persuaded to return. A total of 11,125 indigent patients with venereal disease were given 120,383 treatments.

Forced Hospitalization.—Instructions with respect to the forcible removal of certain patients having communicable disease were recently issued by the assistant director of the bureau of preventable diseases. He said that the great majority of patients affected with an infectious disease are cared for in their own homes. The patient must have a separate room, to be entered by nobody other than those in attendance; the person in attendance should not have the care of other members of the family; there should be a physician in charge, and the patient should remain isolated until discharged by the department of health. Many families, recently arrived in the city, knowing little or no English, fail to understand why their child should be taken to a hospital against their wishes. When necessary, removal is ordered by a medical inspector, subject to the approval of the chief officer of the bureau.

New York City

Urologic Clinic at Medical Center.—Friends of Dr. J. Bentley Squier, professor of urology at Columbia University College of Physicians and Surgeons, have subscribed more than $400,000 to establish the J. Bentley Squier Urologic Clinic at the Columbia-Presbyterian Medical Center. It will occupy the eighth floor of the new Presbyterian Hospital and have accommodations for sixty-four patients.

Lectures for Physicians.—The medical advisory board of the Bellevue-Yorkville Demonstration, in conference with the president of the Medical Society of the County of New York, has planned a course of lectures and demonstrations for physicians in the district from Fourteenth to Sixty-Fourth streets east of Fourth Avenue. Applications should be made to Dr. Shirley W. Wynne, Bureau of Hospitals, East Sixteenth Street. There will be four courses: general lectures on preventable diseases; diphtheria; scarlet fever, and measles.

Mental Ills Among School Children.—In the public schools of Greater New York, 37,000 children were found in need of psychologic service during the year ended June, 1924, according to inspectors of the board of education. This announcement was made at a conference of 500 teachers in mental hygiene and education held under the auspices of the State Charities Aid Association, April 26, in New York. Dr. Thomas W. Salmon, professor of psychiatry at Columbia University College of Physicians and Surgeons, spoke on "Some Educational Problems of School Life."

Personal.—Dr. Simon Flexner, director, Rockefeller Institute for Medical Research, has been appointed an honorary member of the Sociedad Argentina de Biologia of Buenos Aires.——Dr. Kurt Koffka, University of Giessen, and at present visiting professor in the psychology department at Cornell University, gave an address on child psychology, April 8, at a special conference of the Child Study Association of America, in New York.——Dr. David E. Hoag, for several years lecturer of the New York University and Bellevue Hospital Medical College, has been appointed clinical professor in the department of nervous and mental diseases. ——Robert W. de Forrest, president of the Russell Sage Foundation, has been elected first president of the recently organized Welfare Council.

NORTH CAROLINA

State Medical Election.—At the annual meeting of the Medical Society of the State of North Carolina, April 27-28, Pinehurst, Dr. William DeB. MacNider, Chapel Hill, was elected president, and Dr. Lewis B. McBrayer, Southern Pines, secretary-treasurer. The next meeting will be at Wilmington, April 20-22, 1926.

Prison Sanatorium Opened.—The new state prison sanatorium, a branch of the state tuberculosis sanatorium in Hoke County, was opened, April 19, with the admission of eleven state prisoners who have active tuberculosis. These patients will be kept under guard in a fireproof building, but otherwise will receive the same care and treatment as do other patients in the state sanatorium.

NORTH DAKOTA

Health Officers' Meeting.—The first annual conference of state health officers was held at Bismarck, April 27-28. Dr. Clyde E. Stackhouse, Bismarck, was elected president; Dr. William P. Thelan, Wilton, vice president, and Dr. Arthur A. Whittemore, Bismarck, secretary-treasurer.

State Medical Meeting.—At the annual meeting of the North Dakota State Medical Association, Fargo, May 18-19, Dr. Dean Lewis, Chicago, will speak on "Lesions of the Soft Parts of the Extremities in Relation to Fractures," and "The Diagnosis of Abdominal Lesions"; Dr. Arthur S. Hamilton, Minneapolis, on "Syphilis of the Central Nervous System"; Dr. William F. Braasch, Rochester, Minn., on "The Recognition and Treatment of Urinary Infection"; Dr. Hiram Winnett Orr, Lincoln, Neb., on "Mechanical versus Chemical Methods in the Treatment of Wounds"; Dr. John Butler, Minneapolis, "Eczematoid Ringworm of the Skin," and Dr. John P. Schneider, Minneapolis, "The Differential Diagnosis and Treatment of Chronic and Recurring Arthritis." There will be dry clinics in the afternoon of both days.

OHIO

State Medical Election.—At the seventy-ninth annual meeting of the Ohio State Medical Association, Columbus, May 5-7, Dr. Leora G. Bowers, Dayton, was elected president-elect; Dr. Clarence D. Selby, Toledo, was installed as president; Dr. Herbert M. Platter, Columbus, reelected treasurer, and Dr. Sylvester J. Goodman, Columbus, reelected secretary of the council.

Reserve Medical Officers in Ohio.—The total number of physicians in Ohio holding appointments in the Medical Officers' Reserve Corps is 331, including one brigadier general, twelve colonels, thirty-nine lieutenant colonels, 116 majors, 108 captains and fifty-five first lieutenants. In addition, organization was started in 1924 of General Hospital No. 99 at Ohio State University College of Medicine, of Evacuation Hospital No. 47 at Grant Hospital, Columbus, and of Surgical Hospital No. 5 at St. Vincent's Charity Hospital, Cleveland.

Society News.—The Tuscarawas County Medical Society met in joint session, at a banquet, with the dentists of the county at New Philadelphia, recently.——Seventeen Tuscarawas County physicians recently celebrated at a banquet at Uhrichsville the fiftieth anniversary of Dr. John J. Gooding's entrance into the practice of medicine. Dr. Gooding has spent forty-three years of this time in rural practice at Gilmore.——Dr. Grover C. Penberthy, Detroit, recently addressed the Muskingum County Academy of Medicine, Zanesville, on "The Reduction and Splinting of Fractures."——Dr. Edwin A. Hamilton, assistant professor of surgery, Ohio State University College of Medicine, Columbus, recently addressed the Pickaway County Medical Society, Circleville.——Dr. Richard L. Sutton, Kansas City, Mo., addressed the Academy of Medicine of Cleveland, May 2, on "With Gun and Camera in Sunny Africa."

Report on the "Health Organization Movement."—The committee on medical economics of the Ohio State Medical Association has made a study of the growth of the "health organization movement." There are, the report states, three types of this commercial health service, such as (1) a "service" located in Chicago which specializes in quarterly urine tests; (2) the small community office which dispenses health examinations and so-called treatment at a fixed annual rate—there are a number of these in Ohio; (3) the large organization having community examiners who receive $5 per patient for their services from the organization which charges the patient from $20 to $25. The committee recommends that Ohio physicians refuse to have any connections with health services of the three types mentioned, and suggests that it be authorized to continue the study of the "health organization movement" and report to the council of the state medical association as the need for definite action arises.

OKLAHOMA

New Revocation Law.—The governor has signed a bill passed by the last legislature, which provides that any physician convicted of a felony or crime involving moral turpitude will thereby immediately lose his license to practice medicine. The new state board of medical examiners will consist of seven members, instead of nine as heretofore, and will have judicial power in holding hearings for revocation of licenses.

Increase of Rabies.—There were seven deaths from rabies caused by the bites of dogs in 1924 in Oklahoma, and this year to date there have been three. During January, 1925, there were fifty-three specimens sent to the state laboratory for examination for rabies, of which twenty-two were positive; in February, fifty-four with twenty-one positive; in March, eighty-three with twenty-six positive, and in April, seventy-nine with twenty-nine positive. During these four months, the state laboratory has sent out 539 Pasteur treatments, which cost the state about $10,000. Heretofore these treatments have been furnished free to all indigents, but their free distribution was discontinued, May 1, owing to lack of appropriation by the legislature. The state department of health considers it necessary, therefore, for every municipality in the state to pass an ordinance requiring dogs to be immunized against rabies, and has had such an ordinance compiled for distribution to all towns.

PENNSYLVANIA

Hospital News.—A contract has been let for a $150,000 addition to the Suburban General Hospital, Bellevue.——The board of directors of the York Hospital recently purchased twenty acres of grounds as a site for their proposed $1,000,000 institution.

Society News.—Dr. Alan N. Drury of the University College Hospital, London, will address the staff of the Mercy Hospital, Pittsburgh, May 28, at 8:15 p. m., on "Some Observations Relating to Arteriovenous Aneurysm." Physicians are invited.——Dr. William Engelbach, St. Louis, addressed the Allegheny County Medical Society, Pittsburgh, May 14, on "Diagnosis and Treatment of Disorders of the Ductless Glands."

Philadelphia

County Society Buys Home.—The board of directors of the Philadelphia County Medical Society announce the purchase of the George C. Thomas estate at the southeast corner of Twenty-First and Spruce streets, as a permanent home of the society. A former art gallery and music hall can be altered without great expense to accommodate about 550 persons.

Heliotherapy Demonstration.—The Philadelphia Health Council and Tuberculosis Committee has arranged at the Chestnut Hill Home for Consumptives for heliotherapy treatment for a number of children having nonpulmonary tuberculosis. At the home, a children's building was recently completed. The demonstration will be under the general supervision of a committee consisting of Drs. Thomas McCrae, Henry R. M. Landis, Elmer H. Funk, Astley P. C. Ashhurst and William H. Jefferys. About twelve boys and twelve girls will be taken at the beginning of the demonstration.

Society News.—Lieut. Com. Ernest W. Brown, M. C., U. S. Navy, addressed the Philadelphia County Medical Society, May 13, on "Observations in Acute Lead Poisoning by Inhalation During the Dismantling of Battleships at the Navy Yard."——Dr. William E. Studdiford, New York City, addressed the Obstetrical Society of Philadelphia, May 7, on "The Obstetric Forceps," demonstrated by moving pictures.——The Northern Medical Association held its seventy-ninth annual banquet at the Sylvania Hotel, Monday, May 4. A reception was given to the guest of honor, Edwin S. Stuart, former governor of Pennsylvania.

SOUTH DAKOTA

State Medical Meeting.—At the forty-fourth annual meeting of the South Dakota Medical Association at the Cataract Hotel, Sioux Falls, May 20-21, the program will consist of dry clinics, among others, those conducted by Dr. Arthur E. Benjamin, Minneapolis, on gynecology; Dr. Emil S. Geist, Minneapolis, orthopedics; Dr. Arthur A. Sweeney, St. Paul, neurology; Dr. William J. Mayo, Rochester, Minn., studies in physiochemistry in relation to clinical medicine; Dr. William L. Benedict, Rochester, Minn., diseases of the orbit;

Dr. Henry Longstreet Taylor, St. Paul, Dr. Cole's tuberculosis movie; Dr. Henry F. Helmholz, Rochester, Minn., pediatrics; Dr. Henry E. Michelson, Minneapolis, dermatology, and Dr. Lynne B. Greene, Kansas City, physiotherapy.

TEXAS

Hospital News.—Fifty thousand dollars was bequeathed in the will of the late Mrs. Marion Morton, Haskell, for the erection of a hospital in that city as a memorial to her husband. —— The Methodist Hospital is building a $1,000,000 Dallas Sanatorium at Oak Cliff on a twelve acre site.

State Society Revises Constitution and Reduces Dues.—At the annual meeting of the State Medical Association of Texas, Austin, May 7, Dr. William Keiller, Galveston, was elected president-elect; Dr. C. M. Rosser, Dallas, president; Drs. G. B. Taylor, Cameron, C. A. Gray, Bonham, and Minnie C. O'Brien, San Antonio, vice presidents; Dr. Holman Taylor, Fort Worth, secretary (reelected), and Dr. K. H. Beall, Fort Worth, treasurer (reelected). The next annual meeting will be in Houston. Among the outstanding transactions of the sessions was the reduction of dues from $15 to $10, the adoption of a complete revision of the contsitution and by-laws and the practically unanimous endorsement by the house of delegates of the publicity and educational campaign conducted last year.

WEST VIRGINIA

The Governor Neither Signs Nor Vetoes.—Governor Gore permitted the chiropractic bill to become a law without his signature through expiration of the time limit. A conference having been called by President Jeffers of the state medical association, representatives from practically every county medical society in the state, with the dean of the West Virginia Medical School as spokesman, appeared before the governor to urge him to veto the bill. The governor suggested that the matter be presented to him by a committee at a later date but failed to call that committee for a conference. Efforts to amend the bill in the senate met with failure; in its last days in the house, an amendment was added disqualifying chiropractors from giving medical testimony in any court in West Virginia, and barring them from receiving fees for treating injured workmen under the compensation act, and yet, the state medical journal says, the same law licenses chiropractors to treat children and the aged, in fact any person, for contagious diseases, authorizes them to sign death certificates, and places two of them on the state public health council—a most peculiar legislative situation.

State Medical Meeting.—The fifty-eighth annual session of the West Virginia State Medical Association will meet at Bluefield, June 9-12. All meetings will be in the West Virginian Hotel and the auditorium of the Municipal Building. Among the visiting speakers will be Dr. David Riesman, Philadelphia, whose subject will be "Extra-Abdominal Conditions Simulating Acute Diseases of the Abdomen"; Dr. Ralph Pemberton, Philadelphia, "The Pathology and Treatment of Chronic Arthritis"; Dr. Charles E. Roderick, Battle Creek, Mich., "Complement Fixation—Moving Picture Film"; Dr. Ernest C. Levy, Richmond, Va., "Public Health and Preventive Medicine"; Dr. Guy L. Hunner, Baltimore, "New Viewpoints in the Treatment of Urinary Calculus"; Dr. Marvin M. Cullom, Nashville, Tenn., "Pathology and Treatment of Nasal Accessory Sinus Disease"; Dr. Walter E. Dandy, Baltimore, "Brain Tumors"; Dr. Sporrell S. Gale, Roanoke, Va., "The Treatment of Fractures of the Neck of the Femur"; Dr. George J. Heurer, Cincinnati, "The Diagnosis and Treatment of Intrathoracic Tumors," and Dr. Emil Novak, Baltimore, "So-Called Idiopathic Uterine Bleeding." A program of entertainment has been arranged for the visiting women.

WISCONSIN

Whistles Removed from Cracker Jack.—As a result of recommendations of the committee on public policy and legislation, Wisconsin State Medical Society, one danger to children has been eliminated, and another removed, by the Cracker Jack Company. That company has willingly agreed to discontinue the use of the small tin whistle as a prize in its cracker jack packages, and to enclose any other metal toy that may be used in a paper container to prevent such toys being accidentally swallowed. These changes affect not only Wisconsin but also the entire national distribution of cracker jack.

Country Doctor Honored.—Three hundred residents of Hammond assembled recently in that village to celebrate the fiftieth year of service of their only physician, Dr. Eugene L. Boothby. There were persons from practically every walk of life present, to most of whom Dr. Boothby had ministered. The dean of the University of Minnesota School of Medicine, Dr. Elias P. Lyon, told of Dr. Boothby's postgraduate study at the university at the age of 76, and that he had been invited to talk to the students as an inspiration to them. At the close of the program, Dr. Boothby received a present from his townsfolk as further evidence of their appreciation of his long and faithful service.

GENERAL

Orchestra of Physicians.—There is an orchestra composed entirely of physicians in Newark, N. J., which at present comprises eighteen members and performs at medical functions. The only available record of an orchestra of physicians is the Berlin Medical Orchestra Association, noted in THE JOURNAL, Nov. 25, 1911, p. 1776, and May 9, 1925, p. 1432.

Roentgen-Ray Films in Record Files.—The surgeon general, U. S. Public Health Service, has issued instructions to all U. S. marine hospitals to remove from clinical record files roentgen-ray films of inflammable type which are not essential for record purposes. Boards of officers have been called in various marine hospitals for this purpose. One hospital has eliminated about 600 pounds of old style films. The material has a small sales value. The use of fire-resisting films, which are no more inflammable than ordinary paper, was introduced in marine hospitals last July.

American Conference on Hospital Service.—The U. S. Veterans' Bureau and the National Home for Disabled Volunteer Soldiers have accepted membership in the American Conference on Hospital Service, with which the medical departments of the Army and Navy and the U. S. Public Health Service are already identified. The National Home for Disabled Volunteer Soldiers, which conducts branch hospitals and homes in ten states, will be represented at the American Conference on Hospital Service, which meets in Louisville, Ky., at the time of the American Hospital Association convention, October 19-23, by Col. B. F. Hayden and Col. Vernon Roberts, both of Dayton, Ohio, and the Veterans' Bureau will be represented at the conference by the director.

Fellows Announced.—The National Research Council has announced the names of twelve newly appointed fellows in medicine, their subjects and the place of study; also the names of twenty-four who were reappointed for another year. The fellowships are for the purpose of increasing the supply of medical teachers in this country and Canada. The funds are supplied by a joint contribution from the General Education Board and the Rockefeller Foundation, the maximum being $100,000 a year, for a period of five years, ending with 1927. The normal minimum stipend for fellows is $1,800 for unmarried, and $2,300 for married fellows. Communications should be addressed to the chairman of the Medical Fellowship Board, National Research Council, Washington, D. C.

Accidental Poisoning in Children.—There were seventy deaths from accidental poisoning in 1924 among children from 1 to 4 years of age, insured in the industrial department of the Metropolitan Life Insurance Company. Definite information regarding the type of poison was obtained in fifty-seven instances. Fourteen different kinds of poisons were ingested by these children. Strychnin compounds were responsible for the largest number of deaths (twenty-four); lye and other alkalis were second, with six deaths. Cathartic pills containing strychnin and left within the reach of children caused the death of seven children; tonics containing strychnin caused the death of three. All sections of the United States and Canada are represented in these figures. The *Statistical Bulletin* of the Metropolitan Life Insurance Company concludes that the dangers of strychnin compounds are not generally appreciated, and that possibly such highly poisonous drugs should be procurable only on a physician's prescription.

Award for Demonstration of Supernormal Phenomenon.—An award of $5,000 has been offered by the *Journal of Abnormal and Social Psychology* to any person claiming to produce supernormal, material phenomena, who will be the first to demonstrate the actuality of the same under rigid laboratory conditions. The conditions are that the medium freely, voluntarily and wholeheartedly cooperate with the committee, that the phenomena be bona fide, supernormal and due to

some force not previously known to science (they shall not be due to conscious or subconscious behavior of the medium), and that the phenomena be subject to instrumental control, visible, and produced in full light. All communications should be addressed to Dr. S. Burt Wolbach, professor of pathologic anatomy, Harvard Medical School, Boston, secretary to the committee, before November 1. The following have consented to serve on the committee: Harlow Shapley, Ph.D., director of the Harvard College Observatory; Theodore Lyman, Ph.D., director of the Jefferson Physical Laboratory, Harvard University; Dr. Walter B. Cannon, professor of physiology, Harvard University Medical School; Carroll C. Pratt, Ph.D., instructor in psychology, Harvard University, and Mr. Harry Houdini.

Infant Mortality.—Infant mortality rates for 1924 were lower than for 1923, only three out of twenty-five states in the registration area showing higher rates. The death rate for infants in 1924 was 71.9, says the Bureau of the Census, in 1923, 77.7; in 1919, 87, and in 1915, 100 per thousand births. ——A study of 23,000 babies in eight cities reported by the U. S. Children's Bureau indicates that causes peculiar to early infancy related to prenatal and natal conditions were responsible for nearly one third of the deaths under 1 year; gastric and intestinal diseases gave a rate of 32.4; respiratory diseases 19.6, and communicable diseases 7.1. The mortality was lowest for infants born in August and highest for those born in June. The death rate for male babies was about one-fourth higher than for females, and the first born child had a slightly higher mortality than the second. The age of the mother did not have any marked influence on the mortality rate except in the case of the first child, among which children higher rates prevailed when the mother was under 20 or more than 40 years of age. The mortality rate for premature infants included in this study was more than six times as high as that for infants born at term, and among the exclusively artificially fed babies averaged between three and four times that among the exclusively breast-fed. Infant mortality rates classified according to nationality of the mothers showed the lowest rates for Jewish babies and the highest for Portuguese. According to the Children's Bureau, late figures show that 187,000 infants under 1 year of age die annually in the United States, 98,000 of them during the first month.

Society News.—Among the speakers at the annual scientific meeting of the American Association of Industrial Physicians and Surgeons, Hotel Traymore, Atlantic City, N. J., May 25-26, will be Dr. Robert S. Quinby, Watertown, Mass., "Industrial Hazards in Rubber Industries"; Dr. Jonathan M. Wainwright, Scranton, Pa., "A Study of the Incidence of Tetanus Preliminary Note," and Dr. William Martin, Atlantic City, "Physiotherapy in Industry."——At the annual meeting of the Association of American Physicians, May 5-7, at Washington, D. C., Dr. Richard P. Strong, Boston, was elected president; Dr. Charles F. Hoover, Cleveland, vice president; Dr. Francis W. Peabody, Boston City Hospital, Boston, secretary, and treasurer, Dr. John A Capps, Chicago. ——At the annual meeting of the American Gynecological Society, May 4-6, Washington, D. C., Dr. Franklin S. Newell, Boston, was elected president; Drs. Hiram N. Vineberg, New York, and C. Jeff Miller, New Orleans, vice presidents; Dr. Arthur H. Curtis, Chicago, secretary (reelected), and Dr. Charles C. Norris, Philadelphia, treasurer.——At the annual meeting of the American Surgical Association, Washington, D. C., May 6, Dr. John H. Gibbon, Philadelphia, was elected president; Drs. Edward S. Judd, Rochester, Minn., and Edward W. Archibald, Montreal, vice presidents; Dr. Robert B. Greenough, Boston, secretary, and Dr. Eugene H. Pool, New York, treasurer.——At the annual meeting of the American Laryngological Association, May 4-6, at Washington, D. C., Dr. Greenfield Sluder, St. Louis, was elected president; Drs. John E. Mackenty, New York, and Robert Levy, Denver, vice presidents; Dr. George M. Coates, Philadelphia, secretary, and Dr. George Fetterolf, Philadelphia, treasurer.—— At the annual meeting of the American Pediatric Society, May 4-6, at Washington, D. C., Dr. J. H. Mason Knox, Jr., Baltimore, was elected president; Dr. Borden S. Veeder, St. Louis, vice president, and Dr. Howard Childs Carpenter, Philadelphia, secretary-treasurer.——At the annual meeting of the American Dermatological Association, May 4-6, at Washington, D. C., Dr. George Henry Fox, New York, was elected honorary president; Dr. Andrew P. Biddle, Detroit, president; Dr. Otto H. Foerster, Milwaukee, vice president, and Dr. Clarence Guy Lane, Boston, secretary-treasurer.

Conference to Consider Deceptive Advertising. — The National Health Council called a conference, May 5, to consider the subject of deceptive advertising in relation to tuberculosis, venereal disease and cancer. The meeting, held at the Metropolitan Life Insurance Company, New York, was attended by representatives of public health, advertising and publishing organizations. Dr. Hugh S. Cumming, Surgeon General, U. S. Public Health Service, presided. Among the speakers were Dr. Linsley R. Williams, director, National Tuberculosis Association; George A. Soper, director, American Society for the Control of Cancer; Dr. William F. Snow director, American Social Hygiene Association; Dr. Samuel Dana Hubbard, representing the New York City health department; Lee K. Frankel, Ph.D., chairman, National Health Council, and Mr. Holland Hudson, representing the National Vigilance Committee of the Associated Advertising Clubs of the World. Dr. Frankel presented the following resolutions, which were adopted:

WHEREAS, The advertising of alleged cures and treatments for cancer, tuberculosis and venereal disease constitutes a grave menace to individual and community health; and

WHEREAS, Such advertising is manifestly fraudulent in that the remedies advertised cannot cure nor materially relieve the illnesses for which they are offered; and

WHEREAS, Such advertisements are grossly detrimental to the reader's confidence in all advertising and are economically unsound and injurious to the publications in which they appear; therefore be it

Resolved, That this conference of health, social and business groups urges the cooperation of responsible business and public health agencies in the eradication of advertising for cures and medication of tuberculosis, venereal disease, and cancer; and be it further

Resolved, That this conference commends the educational and corrective activities of the United States Public Health Service, the Bureau of Chemistry of the Department of Agriculture, and the Inspection Division of the Post Office Department in suppressing the exploitation of the sick by such fraudulent enterprises; and that we urge Congress to facilitate and continue the extension of these activities; and be it further

Resolved, That this conference recognizes and appreciates the action of many periodicals in closing their advertising columns to such advertising, and that we also commend the activities of organized advertising in promoting such standards of advertising that cures for tuberculosis, cancer and venereal disease cannot be recognized; and be it further

Resolved, That the National Health Council urges advertisers and publishers to use their combined influence in making impossible further exploitation of the public by alleged cures for tuberculosis, cancer and venereal disease, on the ground that such advertising is both injurious to good business and to public health.

FOREIGN

Fund for the Japanese Library.—Tokyo Imperial University has received £400,000, according to the *British Medical Journal*, from J. D. Rockefeller, Jr., and £130,000 from the government of Japan to restore the university library, which was destroyed in September, 1923. The new library will accommodate 1,000 students, as compared with 300 in the old building.

Fatal Roentgen-Ray Injuries.—The *Deutsche medizinische Wochenschrift* relates that Professor Lahm, in charge of the roentgen-ray department of the public gynecologic clinic at Dresden, was prosecuted and has been condemned to pay a fine of 3,000 marks on account of the death of two patients in the establishment from injury by the roentgen rays. His assistant roentgenologist and the attending nurse were given two months' imprisonment for "manslaughter by negligence."

Abrams Follower Loses License.—In an action brought by the medical board of New Zealand against Dr. Dundas Mackenzie, an Abrams follower, the judge ordered that Dr. Mackenzie be removed from the Medical Register and fixed two years as the time after which he may apply for reregistration. Dr. Mackenzie was guilty, it was alleged, of infamous conduct in a professional respect in practicing the Abrams method of diagnosis and treatment in such a manner as to show he could not honestly have believed it was a reliable or useful method in the cases in which he employed it. The hearing lasted nine days. The judge said in part:

It is with regret that I find myself driven to infer from the facts proved in this case that the Abrams system with Dr. Mackenzie was only a means to an end, used primarily not for the purpose of discovering and treating disease but a means by which credulous people were attracted to a surgery where false hopes were raised and money easily gained. . . . If a practitioner leads the public to believe that the system in which he has no faith can detect disease and can be used to check or cure disease, then he is not acting honestly and in good faith and he brings himself within the words of the statute and is guilty of infamous conduct in a professional respect.

CORRECTION

Charles D. Wilkins.—In the report of the death of Dr. Wilkins, Wheeling, W. Va. (THE JOURNAL, May 2, p. 1372), the name should have been Charles D. Wilkins instead of George D. Wilkins.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 2, 1925.

Great Extension of National Health Insurance

Mr. Churchill, the chancellor of the exchequer, has introduced in his budget a vast extension of national health insurance which is certain to become law. The scheme covers the whole of the wage-earning population, who number 15 millions, and with their dependents 30 millions (more than 70 per cent. of our population). It will be contributory and compulsory and will involve additional contributions of 8 cents a week each from a workman and his employer, and 4 cents from the working woman and her employer. Mr. Churchill pointed out that if every man within the ambit of health insurance had contributed 8 cents a week since the age of 16, and every woman 4 cents, and a like amount had been contributed by employers, a self-supporting scheme would now be in operation which would afford $2.50 a week to widows, with an allowance for orphans and children, and $2.50 a week to all insured persons and their wives from the age of 65 years. But a whole generation would pass away before such a scheme could come into operation. The capitalist state, with its stable finance, could, however, fill the immense gap, putting the whole scheme into force in January, 1926. The capital value of the additional liability to be undertaken by the scheme he computed at the immense sum of $375,000,000. Apart from the new scheme, actuaries had predicted a great growth in the existing noncontributory scheme of old-age pensions, as we are now entering on periods seventy years away from the great extension of the population that took place in Victorian times. Moreover, we are living in a period when the span of human life has been prolonged. The census of 1891 showed 5,200,000 persons between the ages of 40 and 60. The census of 1921 showed 9,700,000 between these ages. The tendency to a larger proportion of old persons is increasing, and in fifty years' time the cost of old age pensions will be more than doubled. In thirty years this island will have more than doubled its present number of old and feeble people, and will have to support them with an active population little larger than it is today—a population robbed of much of its natural rate of increase by the war. This was not foreseen when old age pensions were brought into force in 1908. Mr. Churchill would not put on the parliaments of twenty, thirty or forty years' time obligations that would be an overburden. Therefore he proposed to raise the contributions of employer and employed by 2 cents each a week for men and 1 cent for women after the tenth, twentieth and thirtieth years of the scheme, to a maximum in 1956 of 14 cents on each side. From the tenth year the annual cost of the new scheme to the state would be $75,000,000, from the fifteenth year $100,000,000, and from the twentieth, $120,000,000. There would then be a decline of the burden and ultimately the scheme would be on a self-supporting basis. In eighty years the great majority of the participants would have contributed from the age of 16. The state would soon be called on to pay $450,000,000, which would be the cost of bringing the scheme into operation without waiting a generation for the contributions to accumulate. Mr. Churchill endeavored to calm any fears as to the ability of the taxpayer to undertake the new burdens by pointing out as an offset the constant diminution of the cost of war pensions and the relief that would come when the American debt was paid off.

The benefits of the new scheme are as follows: The widows of all men now insured under the national health insurance scheme, who are insured in the new scheme, will receive $2.50 a week for life, the eldest child $1.25, and the other children 75 cents until the age of 14. Secondly, all existing widows of insured men who are now mothers (on behalf of whom no contribution has ever been made) will receive as a free gift from the state the same benefit and the same allowance in respect to children, not for life, but until the youngest child reaches the age of 14½. This provision affects 200,000 widowed mothers and 250,000 children. Existing and future orphans will receive allowances of $2 a week for the first and $1.50 for the second orphan in the family. Thirty thousand children will be affected. Thirdly, two years after the scheme comes into force, all who have been contributors to health insurance for five years and who are more than 65 years of age or who subsequently reach 65 will receive $2.50 a week without any test as to disability. The introduction of pensions at 65 will sweep away all the restrictions (the earning of wages of a certain amount) that disqualify persons over 70 (the present age). According to actuarial calculation, a man of 20 will obtain under the new scheme for 8 cents a week benefits worth 25 cents.

Whatever can be said in favor of the scheme—and on humanitarian grounds much can be said for the pensioning of widows and orphans—it is a further step in the socialism of recent legislation, such as old age pensions and subsidized insurance. But our conservatives, who make a bogey of socialism at election times, make no trouble about the socialistic legislation of their own party.

Sir Rickman Godlee

Sir Rickman John Godlee, Bt., the nephew and biographer of Lister, has died at the age of 76. He came of an old Quaker family, being the second son of a barrister. He was the cousin of Marcus Beck, a surgeon, and a teacher at University College Hospital. Godlee was born at Upton, Essex, in 1849, and was brought up among those surroundings of a well-to-do Quaker family which he afterward described graphically in his life of Lord Lister. He took his B.A. degree at the University of London in 1867. Entering at University College, he proved an expert dissecter, and so exquisite a draftsman that he was employed to make the original drawings for the plates of Quain's "Anatomy." These he presented to the Royal College of Surgeons in 1920. They are preserved in the library, and are much superior to the plates made from them, good as these were. He was admitted a member of the Royal College of Surgeons in 1872, and was elected to the fellowship in 1876, having in the interval taken the degrees of bachelor and master of surgery at the London University, after winning the gold medal at each examination. He went to Edinburgh to learn the new methods that were being introduced into surgery by his uncle. In 1877 he was elected assistant surgeon at University College Hospital, and was appointed assistant demonstrator of anatomy in the medical school. Shortly afterward he became surgeon to the Brompton Hospital, where he made important advances in the surgery of the chest. He performed one of the earliest operations for the removal of a brain tumor. At University College Hospital, Godlee became surgeon and later emeritus professor of clinical surgery. At the Royal College of Surgeons he filled all the usual offices, and was elected president for 1911-1913. Toward the close of his term of office he went to America to deliver an address on the occasion of the foundation of the American College of Surgeons, of which he became an original Fellow. In his address he gave an interesting review of the origin of his own college from a city company and its development into a great examining body and trustee of the Hunter Museum. He was not only a good surgeon and a fine artist, but also

a linguist, a carpenter, a poet, a botanist, an ornithologist and an oarsman. Lister's Life could have been written only by Godlee, whose veneration for his uncle was unbounded. He alone knew the minute details of his life and practice, for as a young man he was left in charge of the private patients on whom Lister had operated. With access to his papers and letters, and from personal recollections, he reconstructed the simple life led by members of the Society of Friends, which is such a feature of his "Life of Lord Lister."

PARIS

(From Our Regular Correspondent)

April 28, 1925.

The International Congress of Military Medicine and Pharmacy

The Third International Congress of Military Medicine and Pharmacy has just closed a successful meeting in Paris (April 20-25). The number attending exceeded 2,500, which is appreciably more than attended the two preceding congresses. The congress is the outgrowth of the interallied surgical conferences held every month in Paris during the war. The congress that has just closed, at which forty nations were represented and to which thirty-five nations sent official delegates, was presided over by Medical Inspector General Vincent, to whom the French army is indebted for the introduction of antityphoid vaccination. The vice presidents were Dr. Tuffier, consulting surgeon to the army, and the director general de Wibin and Della Valle, the chairmen of the first two congresses, respectively. The opening session was held with great ceremony in the large amphitheater of the University of Paris, in the presence of the first executive officer of the state, the minister of war, Marshall Foch and numerous official personages. A discourse was delivered by Medical Inspector General Vincent. A delegation from the congress was despatched to lay a wreath on the tomb of the Unknown Soldier.

At Val-de-Grâce was held a remarkable exhibit where could be found medicosurgical war equipment, such as automobile ambulances and roentgenologic outfits, transportable operating pavilions, fumigation trucks, bacteriologic laboratories, disinfection and delousing apparatus, and equipment for the care of gassed subjects and for the purification of water. These creations were the more remarkable in that they were conceived and produced while hostilities were in progress. The exhibit showed the latest models of each type of equipment and illustrated the improvements that have been made since the war. Sanitary aviation, which has already been successfully introduced in the colonies, was exemplified at the exposition of Val-de-Grâce by the most recent improved models, and an interesting demonstration of sanitary aviation was given at Bourget Field. Topics on the program of especial interest were: technical specialization as the basis of the proper functioning of the sanitary service, and the etiology and treatment of traumatic arthritis and its sequels. After an excursion to Versailles and several formal receptions and gala performances, the congress was closed.

Tuberculosis Among the Hospital Personnel in Paris

Dr. Edouard Rist, a physician on the staff of the Laënnec Hospital and the Léon Bourgeois Dispensary, has been engaged for several years, at the instance of the director general of the Assistance publique, studying the employees and nurses in Paris hospitals with regard to pulmonary tuberculosis. In the *Revue de phtisiologie médicale et sociale*, Rist gives an account of his service during 1923. During this year the number of hospital employees registered at the dispensary was 349 (ninety-four men; 255 women). Social workers made 463 house visits. Of the 349 who requested a consultation, thirty-four came of their own accord, while 315 were instructed by the Service du contrôle to report to the dispensary. Of the 315 employees sent for consultation, 123, or 39 per cent., were recognized as affected with tuberculosis. Of the 126 employees considered as suspects by the Service du contrôle, after a thorough examination twelve were recognized as tuberculous, 109 as nontuberculous, and five were placed under observation. Of the ninety-nine employees reported as tuberculous by the Service du contrôle, after a more extensive examination only thirty-three, or one third, were recognized as tuberculous; sixty-three were found to be nontuberculous, and three were placed under observation. Of the ninety employees reported by the Service du contrôle as affected with open tuberculosis, seventy-eight were recognized as tuberculous, while twelve were found to be nontuberculous.

Dr. Rist was thus able to verify the diagnosis of the Service du contrôle in only a little more than one third of the cases. The Service du contrôle bases its opinion on examinations that are made only once. Rist does not believe that the presence of tubercle bacilli in the sputum, when there is no further evidence of a pulmonary lesion, constitutes proof for the existence of active tuberculosis. If the pulmonary lesion is not discoverable, the correctness of the finding of tubercle bacilli in the sputum should be questioned. In such cases one should suspect either an error on the part of the laboratory or fraud. However, it is never safe to conclude positively, even after a thorough examination, that a patient is not tuberculous, and to fail to find the cause of his symptoms. Following is a list of the affections incorrectly diagnosed by the Service du contrôle as active tuberculosis: hyperthyroidism, 7; cardiovascular disease, 2; nephritis, 3; peptic ulcer, 3; appendicitis, 1; helminthiasis, 1; cirrhosis of the liver, 1; gynecologic affections, 4; nontuberculous pulmonary affections, 24; syphilis, 3; pregnancy, 2; mental affections, 3; overwork, 1; affections of the upper air passages, 87. It will be observed that it is the last mentioned affections that cause the greatest number of errors. It is usually a question of chronic rhinopharyngitis, induced by one of the following nasal defects: spur on the septum, deviated septum, hypertrophy of the nasal turbinates; maxillary, frontal or ethmoidal sinusitis. These conditions induce bronchitis, the physical signs and the functional and general symptoms of which may be deceiving, but which heal readily when the causal disorder is remedied. The patients who presented these conditions were given operative treatment when needed, and recovered.

Twenty-four of the employees found to be nontuberculous had received, on the supposition that they were tuberculous, their entire salary for periods varying from three months to three years. The total number of months during which they were accorded leave of absence amounted in the aggregate to 432, which represents a net loss to the administration of more than 200,000 francs ($10,500). The 192 employees who in 1923 were declared by Rist to be free from tuberculosis have been kept under observation. It is certain that, if diagnostic errors had been committed these would have been revealed later on. Of the 192 employees, however, only two thus far have presented unquestionable lesions of pulmonary tuberculosis. The treatment of patients found to be tuberculous is facilitated by the decision of the Assistance publique to pay the entire salary of tuberculous employees for the full duration of their illness. But the hospital administration would be perfectly justified in allowing only such employees the benefit of this measure as show a willingness to act in accordance with therapeutic advice.

Compulsory Sunday Closing of Pharmacies

In September, 1924, the Paris prefect of police issued an order compelling pharmacies to close on Sunday. Imme-

diately, protests appeared in the press against the order, which, it was alleged, carried a danger to public health and was also illegal. While it might be admitted that an employer must give his employees a rest on Sunday, it was difficult to understand how he could legally be restrained from opening his place of business on Sunday if he were disposed to take the work on himself. In spite of the many protests that were launched against the prefect's order, it was not repealed; on the contrary, judicial action was taken against numerous pharmacists who, confident of their rights, had refused to submit to the order. And they have been rewarded for their confidence and persistence, for the courts have upheld them in their contention. In a decision rendered last month, the Tribunal civil d'appel de la Seine acquitted the pharmacists, declaring that the charges brought against them by the Paris police court were unfounded, in consequence of which the plaintiffs were compelled to pay the costs in the lower court and also in the court of appeals.

NETHERLANDS

(From Our Regular Correspondent)

April 5, 1925.

Renewal of the Goiter Inquiry

In a previous letter, I referred to the researches carried out last year, particularly at Utrecht and at Middelburg, on the effects of the drinking water of cities on the appearance of goiter. The experiments cited had been far from conclusive. The Conseil central d'hygiène has decided to continue its systematic study of the goiter problem and has recently appointed two commissions to take charge of the further investigations. The first of these commissions is composed of chemists and hydrologists, the chairman being Mr. Kannink, president of the Office central des distributions d'eau. The second commission is of a medicohygienic character and is under the chairmanship of Dr. Josephus Jitta, president of the Conseil d'hygiène. The latter commission has begun an inquiry throughout the Netherlands to determine the total number of goiter cases, in order to have at the start a definite basis for discussion.

Epidemic Encephalitis

Most countries have published statistics on the evolution and the development of epidemic encephalitis. In the Netherlands, as the disease has never been made notifiable, there has been, up to the present time, no general survey of the incidence and types of encephalitis. Therefore, Dr. Boumen of Amsterdam has taken on himself the task of collecting in the hospitals and from physicians' records of private cases all the scattered findings possible. In this manner, he has been able to secure the reports on nearly 200 cases that occurred during the period from 1918 to 1923. The most acute cases appeared during the years 1920 and 1921. The mortality was very high (from 25 to 30 per cent.). Furthermore, in the cases in which the patients recovered from the affection, very serious sequels usually followed.

The Antituberculosis Campaign Among Railway Employees

The association of railway employees recently dedicated a building at Utrecht in which are centralized various antituberculosis services, including consultation rooms, a laboratory and a room for roentgenographic treatment.

Vital Statistics for 1924

The central bureau of statistics has just published the annual report on the birth and death rates for 1924. The birth rate was 24.9 per thousand of population. This figure is practically the same as for the preceding years, although it shows a slight falling off. The death rate was 9.6 per thousand inhabitants, which is 0.3 lower than the rate for 1923. However, the rate for 1923 was the lowest ever recorded. A comparison of this figure (9.6) with the rates for previous periods is very suggestive: The death rate in 1840 was 26.6 per thousand; in 1880, 21.3 per thousand, and in 1910, 13.5 per thousand. The infant mortality rate has dropped from 56.9 per thousand in 1923 to 51.2 per thousand in 1924. In 1880 the infant mortality rate was 190.9 per thousand.

A Study Tour of Health Officers

During the fore part of May, we are expecting a second visit of foreign health officers. As last year, the tour has been organized by the League of Nations at the instance of the International Bureau of Labor. The guests will be medical inspectors of labor from various countries. They will visit first Belgium, then northern France and England, whence they will proceed to the Netherlands, visiting The Hague, Amsterdam and Eindhoven.

The Law Pertaining to Psychopaths

In a recent letter I mentioned that the public press had demanded that discussion be reopened on the proposed law pertaining to psychopaths which came up in 1910 but which since then seems to have been shelved. The present penal code admits either the total responsibility of a criminal or his absolute irresponsibility in case he presents a significant nervous or psychic defect. It is alleged that recent court trials have shown the complete inadequacy of the present conception of criminal responsibility, it being held that, owing to this false conception, sometimes responsible criminals escape justice or, inversely, irresponsible persons are unjustly convicted. As a result of the agitation, parliament has consented to reopen the question, and it is possible that some modification of the present code which will permit the recognition of an attenuated responsibility will be written into the statutes.

BERLIN

(From Our Regular Correspondent)

April 11, 1925.

Health and Efficiency of Workmen in Relation to the Distances Traveled to and from Work

A modern tendency is manifest to locate the homes of workmen in healthful sections with a rural atmosphere, far removed from the environment of factories. Prof. E. G. Dresel, a hygienist of Heidelberg, Baden, has discussed (*Deutsch. med. Wchnschr.* **50**:959 [July 11] 1924) the effects of the distances traversed to and from work on the health, industrial capacity and social life of workmen employed in the extensive car shops located in the village of Kirchheim, near Heidelberg. His investigations concern conditions as he found them in 1920-1922 in five residential areas: (1) Kirchheim and the adjoining village of Rohrbach; (2) the neighboring city of Heidelberg, with suburbs; (3) railway stations from 4 to 12 kilometers (from 2½ to 7 miles) distant; (4) railway stations from 12 to 46 kilometers distant, and (5) villages more than a forty minute walk from the nearest railway station, without reference to the distance to be traversed by railway. The first region furnished 1,090 workmen; the second, 638; the third, 806; the fourth, 263, and the fifth, 109 workmen. The older workmen resided mainly in the regions nearest the shops. The workmen living in Kirchheim had suffered the fewest accidents, while there was a direct correlation between the frequency of accidents and of illnesses and the time and expenditure of energy required to make the distance to and from the shops. Agricultural work performed in spare hours, especially before shop work was begun in the morning, and walking, or riding a bicycle, to and from work, contributed to the common result. The third and the fifth regions showed the greatest disability from "colds." Also the duration of sicknesses was found to

be greater, the greater the distance traversed or the expenditure of energy required. Workmen who are fatigued by long walks or rides to and from work are found to give a poorer account of themselves during the working hours in the shops than the workmen residing in the adjoining village. Also the number of hours absent from work was proportionately greater, the greater the distance the workmen had to traverse to reach the shops. While the statistics do not cover the point, it is evident also that the shorter time that workmen coming long distances could spend with their families presents certain disadvantages. Improvements in transportation facilities, for instance, the establishment of rural autobus lines, betterment of the housing situation, and (not the least in importance) the introduction of a system whereby trained workmen could be exchanged between factories with a view to giving them employment in factories nearest their homes, would do much toward relieving the situation.

Innervation Problems

Before the Berlin medical society, Professor Boeke, who occupies the chair of histology at the University of Utrecht, recently delivered an address on his researches on the nerves. With the aid of excellent photographs of very delicate microscopic preparations, Boeke was able to demonstrate that a nerve ending does not, as has heretofore been supposed, rest as a terminal plate on a muscle fiber, but that it projects into the protoplasm of the muscle cell, and there branches out, forming diverse hooks and loops, and that ultimately the protoplasm of the nerve and the protoplasm of the muscle merge. Boeke displayed illustrations of the embryonal heart, the iris of the human eye and of birds, the heart muscle of the turtle, the cornea of the human eye, the taste buds of the tongue, and the tactile organs in the skin of a duck's bill and in the snout of a mole. In all cases the fact that the nerve endings were projected into the cells and united with them was clearly demonstrated. A portion of the slides reproduced microscopic sections of the bundle of His. The microscopic sections were, in great part, stained by the Bielschowsky method. Some of the slides showed the changes occurring after the division of nerves and in transposed and regenerated nerves. Boeke had, in one instance, divided the hypoglossal and the glossopharyngeal nerves and, after interchanging the divided portions, had united them. The nerve fibers, after their division, sought to open up a new route to their goal. Cells of connective tissue are formed, into which the nerve fibers grow. The new connective tissue fibers serve as guides for the new nerve fibers, so that the nerve finds its way over a carefully leveled path to distant points where it is needed.

Inoculation with Recurrent Fever in the Treatment of General Paralysis

The treatment of general paralysis by inoculation with recurrent fever, as Dr. König brought out in a recent address before the Bonn medical society, was first employed by Plaut and Steiner in 1919. As compared with inoculation with malaria, treatment with a recurrent fever infection has the advantage that we are dealing with a milder disease, one that is self-limited and one which, under our conditions at least, is not directly transmissible. The technic of the infection is not complicated; inoculation can be carried out from animal to man or from man to man, without any noticeable differences in the course of the disease. Four or five fever crises, lasting sometimes one and sometimes several days, occur at intervals of from five to ten days. The fever seldom goes above 40.5 C. Aside from minor associated symptoms, such as pains in the limbs, headache or a general feeling of discomfort, only in one case did anything serious occur: one patient who from the start was much reduced physically developed a transient cardiac weakness. Signs of improvement in a patient's condition do not usually manifest themselves under two to four months after the inoculation with recurrent fever, and then they appear during the course of treatment with silver arsphenamin, which is regularly instituted after the fever has run its course. Thus far, twenty-six patients in all have been inoculated. Five of these cases are too recent to be considered. Of the remaining twenty-one patients, two were affected with tabes and one with cerebral syphilis; these three cases are not considered further. Eighteen patients with general paralysis were inoculated; of these, eleven present a complete remission; three are somewhat improved; two show no improvement, and two have died, one succumbing to a paralytic attack a few weeks after the inoculation, after having had numerous previous attacks, and a second to an acute ileus. By complete remission, much greater improvement in a patient's condition is meant than was formerly signified by remission. However, retrogression of the physical manifestations does not go hand in hand with the improvement in the patient's mental condition. But the disturbance of speech nearly always disappears. From the serologic standpoint, only in two cases were all tests for syphilis, including the Wassermann test of the cerebrospinal fluid, found to be negative. In the other cases there was either no change or only a suggestion of retrogression. How long the improved conditions or the momentary cures will continue, it is too early to state. The case that has been under observation the longest dates back two years. In any event, according to König's opinion, the results justify further trials of the treatment, since the restoration of a patient to a condition in which he is able to work for even a limited time is a matter of great importance.

BUCHAREST

(From Our Regular Correspondent)

April 9, 1925.

Conditions of Physicians and Sanitation in Russia

Dr. George Rozvany, former military surgeon, who has just returned from Russia after eight years' imprisonment, relates the following: Although the soviet government regards physicians as productive workers, still, since they are nationalized, that is, paid by the state, they are in very bad circumstances. Lately private practice has been permitted, but income from this source is subjected to such a heavy tax that it amounts to nothing. Physicians say that their salary keeps them from dying of starvation, but is too little to live on. Most people are unable to afford private physicians; therefore, the hospitals are always crowded. In one of the Leningrad hospitals there were 57,000 childbirths in one year. The equipment of some hospitals is above criticism. The roentgen-ray hospital in Leningrad is a beautiful sight; it is equipped with the most modern installation for diagnosis and therapy. In this hospital, from forty to fifty physicians are occupied with scientific researches. The medical books used in Russia are mostly German. In the windows of bookshops one sees the latest German medical books, while English and American books are relatively scarce. Physicians are so miserably paid by the state that most of them are unable to buy books. The book merchants do not buy their stock of books outright, but get them on commission.

Great stress is laid in Russia on prophylaxis. Hygienic institutions are making studies of the methods of defeating venereal diseases, tuberculosis, mortality of children and the infectious diseases. The people are instructed by sanitary exhibitions. Schools in woods, prophylactic sanatoriums and infants' homes are numerous. There is a great scarcity of dwellings, and there are vast numbers of homes that are untenable from the hygienic point of view. Artificial abortion is permitted, if performed from a sociological or material

point of view, but only up to the third month of pregnancy. There is a commission consisting of women to superintend the justness of the grounds. Sexual vices, procuring, and infecting another person are punished severely. Illegitimate children have entirely equal rights with legitimate children. The school conditions are better than they were in the time of the czars. Schooling is obligatory and entirely free. Since the soviet rule, not only have a great number of grammar and secondary schools been established, but also the number of universities has been augmented. As the prices of the different goods are very high, and a physician earns less than the physical worker, though his requirements are greater, the conditions are most deplorable.

Fatalities from "Neo-Arsphenamin"

Fatalities following the administration of intravenous neo-arsphenamin have recently been rather frequent in Roumania. The death of three military officers, one of them a major, has attracted attention especially to these fatalities. The sanitary authorities have been accused of carelessness and negligence in controlling the importation of the arsphenamin. Some extremist journals tried to turn the responsibility on a famous German firm, manufacturers of an arsphenamin product, suggesting that they intentionally sold poisonous neo-arsphenamin to Roumania, their late enemy.

Another and more moderate view expressed the suspicion that the deadly neo-arsphenamin is a falsification made outside Germany. Recently a Bucharest pharmacist reported to the minister of public health that he was offered neo-arsphenamin well below the regular price of the drug. A sample of this drug was analyzed in the chemical laboratory of the university, and was found to be a most nefarious falsification containing calcium sulphate, barium sulphate and a lead salt to give the yellow color. The minister ordered the arrest of the vender and the confiscation of the whole stock. At the same time the minister sent circulars to all physicians instructing them how to discover the imitations. Sanitary officers in all parts of the country were instructed to take samples of neo-arsphenamin from every drug store. These having been analyzed, it was found that some unconscientious forger went so far as to offer as neo-arsphenamin common salt, colored yellow, and packed like the original preparations. In one or two cases it was proved that death after neo-arsphenamin administration was due to the want of proper care on the part of physicians, who had used the contents of broken phials with oxidized contents.

Prizes for Medical Dissertations

The council of professors of the medical faculty of Bucharest University has offered a prize of 4,000 lei for each of the best essays on the following subjects: (1) fracture of the base of the skull in children; (2) the rôle of heliotherapy in the treatment of surgical tuberculosis; (3) the treatment of harelip, and (4) the treatment of congenital pes equinovarus. The essays must be based on independent researches, and written in Roumanian or in French. Only Roumanian physicians or fifth year medical students are entitled to apply. The result of the competition will be proclaimed, October 1. All dissertations that win prizes will be called memorial dissertations to the memory of Prof. G. Ramniceanu.

The Bad Consequences of Abuse of Spices

Dr. Stefanescu of the University of Jassy demonstrated by actual experiments that the abuse of spices, by itself, may determine cirrhosis of the liver, of the type usually attributed to alcohol. His observations bore mainly on ordinary pepper and the so-called paprika, very extensively cultivated and consumed in Hungary, which he administered to dogs and cats, either alone or together, for long periods of time, extending in some instances over a year. In the dog the ingestion of even comparatively large doses of these substances did not prevent a gain of weight; but, when killed, well marked changes in the liver cells were found, these having undergone necrosis similar to that produced by phosphorus. In the cat, on the other hand, he invariably observed a tendency to emaciation, which bore no obvious relation to the amount of pepper administered. In these animals there was also cirrhosis of the liver. We may infer from these results that pepper exerts an irritating and destructive action on the liver substance and a sclerosing effect on the liver stroma, identical with that brought about by alcohol and certain other poisons. Iteanu is careful to remark that the doses he employed were not unduly large, not exceeding from 0.01 to 0.05 gm. at each feeding for the cat and 2 gm. a day for the dog, quantities that are not greater than people are in the habit of taking in certain parts of Roumania.

Total Excision of the Larynx for Carcinoma

In the Medical Society in Cluj, Dr. Paul Steiner reported the following case: A man, aged 55, for months previously had been hoarse. During that time he had lost 10 kg. in weight. Examination with the laryngoscope showed a new growth on the right vocal cord, which in some spots had become cicatrized and presented a nodular surface. At a subsequent examination he excised a small piece of the growth intralaryngeally, and this under the microscope proved to be carcinoma. No infiltrated glands were present in the neck. As he thought there was a good prospect, seeing that the carcinomatous growth was confined to the trachea, he removed the larynx, November 30 of last year. The operation was performed under deep narcosis, without previous tracheotomy, and his experience justified the statement that tracheotomy is not always necesasry in operations of this kind. He employed a cannula only after the operation was over. As soon as the wound had healed, he employed the artificial larynx modified by Bruns, and this the patient continues to wear. With this larynx he speaks quite intelligibly, and his words can be well heard in a large room. As no gland infiltration was present, Dr. Steiner hopes that the cure will be permanent, the more so as patients continue the use of radium. On the excised larynx Steiner found that the carcinomatous growth occupied the whole left half, and anteriorly it extended over the midline to the right half of the larynx. Downward it extended to the cricoid cartilage. Judging from these appearances, the patient could be cured only by total extirpation of his larynx.

Marriages

EVA FREILE, Jersey City, N. J., to Rev. W. Gordon Pringle, formerly of New York, at Covington, Ky., April 8.

HERBERT HARDY HOWZE to Miss Lorraine Estelle Peckenpaugh, both of Memphis, Tenn., May 9.

JAMES STEWART AKEHURST, Baltimore, to Miss Mabel Bonner Yost of Melvale, Md., April 27.

EUGIE ALVA CAMPBELL, Heavener, Okla., to Miss Iller King of Shreveport, La., at Homer, April 15.

LUDO REVALLIER VON MEYSENBUG to Miss Heda Manette Kock, both of New Orleans, April 14.

GEORGE CLINTON ANDREWS, JR., New York, to Miss Emily Donner of Summit, N. J., May 1.

WALTER PAUL MOENNING to Miss Margaret Ellen Dugan, both of Indianapolis, April 25.

WILLIAM RANDOLPH SMITH to Miss Jean Douglas, both of Atlanta, Ga., March 11.

HAMILTON N. MORROW to Miss May Oberg, both of Fremont, Neb., April 2.

Deaths

Alphonso David Rockwell, Flushing, N. Y.; Bellevue Hospital Medical College, New York, 1864; professor of electrotherapeutics, New York Post-Graduate School of Medicine, 1888-1892; Civil War veteran; neurologist and electrotherapeutist to the Flushing Hospital, 1904-1912; member and past president of the American Electro-Therapeutic Association; author of "Relation of Electricity to Medicine and Surgery," and other works; aged 84; died, April 29.

James A. Henshall, Cincinnati; Eclectic Medical Institute, Cincinnati, 1860; Eclectic Medical College of the City of New York, 1867; formerly superintendent of the U. S. Bureau of Fisheries, and president of the American Fisheries Society; received medal at Paris Exposition, 1900, and St. Louis Exposition, 1904, for literature on fish culture; author of books on fish; aged 89; died, April 4.

John Maglott, Mansfield, Ohio; Western Reserve University School of Medicine, Cleveland, 1891; member of the Ohio State Medical Association; past president of the Richland County Medical Society; for several years city health officer and at one time county coroner; aged 66; died, March 17, following a long illness.

Malcolm Eadie Smith ✠ Muskegon, Mich.; Columbia University College of Physicians and Surgeons, New York, 1905; member of the Washington State Medical Association; served during the World War; on the staffs of the Mercy and Hackley hospitals; aged 53; died, April 15, at a hospital in New York.

Richard Austin Stewart, Washington, Pa.; Western Pennsylvania Medical College, 1887; member of the Medical Society of the State of Pennsylvania; served in the M. C., U. S. Army, in France, during the World War; on the staff of the Washington Hospital; aged 59; died, April 17, of heart disease.

Daniel Webster Cathell, Baltimore; Long Island College Hospital, Brooklyn, 1865; member of the Medical and Chirurgical Faculty of Maryland; formerly professor of pathology, College of Physicians and Surgeons, Baltimore; aged 86; died, May 1, at the Church Home and Infirmary.

Thomas Farris Hale ✠ Louisville, Ky.; University of Pennsylvania School of Medicine, Philadelphia, 1915; clinical instructor in medicine, University of Louisville School of Medicine; on the staff of the Louisville City Hospital; served during the World War; aged 37; died, April 26.

Henry Clay, Dallas, Texas; Baylor University College of Medicine, Dallas, 1909; member of the State Medical Association of Texas; served in the M. C., U. S. Army, during the World War; formerly on the staff of the Baylor Hospital, where he died, April 6, aged 43.

Edward Michael Keough, Manistee, Mich.; Michigan College of Medicine and Surgery, Detroit, 1901; member of the Michigan State Medical Society; aged 53; died, April 23, at the Mercy Hospital, of cerebral hemorrhage, following an operation.

George Sherman Peck, Youngstown, Ohio; University of Wooster Medical Department, Cleveland, 1876; on the staff of the Youngstown Hospital; aged 74; died, February 27, at the Lakeside Hospital, Cleveland, of cerebral hemorrhage.

George W. Peirce, Winchester, N. H.; Berkshire Medical College, Pittsfield, Mass., 1855; formerly state senator; chairman and member of the board of education for more than forty years; Civil War veteran; aged 92; died, March 14.

Roy Seymour Hinsdale, New York; Columbia University College of Physicians and Surgeons, New York, 1898; member of the Medical Society of the State of New York; aged 52; died, April 27, at Hamilton, Bermuda.

Albert Buffum Hoag, Center Sandwich, N. H.; Dartmouth Medical School, Hanover, 1900; member of the New Hampshire Medical Society; aged 52; died, February 13, at the Laconia (N. H.) Hospital, of myocarditis.

Samuel Sanford Orr, Brookline, Mass.; Tufts College Medical School, Boston, 1897; member of the Massachusetts Medical Society; served in the M. C., U. S. Army, during the World War; aged 56; died, April 9.

Edward L'Hommedieu McGinnis ✠ New York; Long Island College Hospital, Brooklyn, 1883; member of the New York Obstetrical Society; aged 63; died, April 28, at St. Luke's Hospital, of cerebral hemorrhage.

John Frank Spear, Churdan, Iowa; University of Illinois College of Medicine, Chicago, 1908; member of the Iowa State Medical Society; aged 40; died, April 18, at a hospital in Des Moines, following an appendectomy.

Walter H. Wood ✠ Greeley, Colo.; Albany (N. Y.) Medical College, 1898; for six years county coroner; aged 49; died, April 18, at a hospital in Colorado Springs, of pneumonia, following influenza.

Reuben Schurtz, Streator, Ill.; University of Michigan Medical School, Ann Arbor, 1876; member of the Illinois State Medical Society; aged 72; died, April 11, at Miami, Fla., of lobar pneumonia.

Charles G. MacCallum, Vancouver, Wash.; Trinity Medical College, Toronto, Ont., Canada, 1901; county coroner; formerly city and county health officer; aged 52; died, April 16.

George M. Rees, Calumet, Mich.; Rush Medical College, Chicago, 1892; for more than thirty-four years on the staff of the Calumet and Hecla Hospital; aged 57; died, April 24.

Charles Paxton Grandfield, Washington, D. C.; Howard University School of Medicine, Washington, 1889; first assistant postmaster general, 1908-1913; aged 63; died, April 7.

Reginald Bertram Leister, Tiffin, Ohio; Starling Medical College, Columbus, 1897; member of the Ohio State Medical Association; aged 52; died, in March, of heart disease.

Thomas Wren McGehee, Gloster, Miss.; New Orleans School of Medicine, 1866; Civil War veteran; aged 84; died, February 24, at Vicksburg, of cerebral hemorrhage.

Martha J. Kuznik, Los Angeles; National Medical University, Chicago, 1896; formerly a practitioner in Chicago; aged 74; died, April 19, following a long illness.

Jotham Clarke Johnson, Newark, N. J.; Medical Department of Columbia College, 1883; member of the Medical Society of New Jersey; aged 70; died, April 14.

Joseph Ballie Ruttan, Wellington, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1863; aged 84; died recently, of hypostatic pneumonia and senility.

Jarrett M. Jelks, Searcy, Ark.; University of Tennessee College of Medicine, Memphis, 1878; member of the Arkansas Medical Society; aged 77; died, February 8.

David Davis King, Greensboro, N. C.; University of Maryland School of Medicine, Baltimore, 1904; aged 40; died, April 21, following a self-inflicted wound.

Philip Henry Groginsky, South Fallsburg, N. Y.; Baltimore University School of Medicine, 1900; county coroner; aged 44; died, April 22, at Kingston.

Frederick John Wildanger, Elk Grove, Calif.; Chicago Medical College, 1895; aged 63; died, February 17, of injuries received in an automobile accident.

Asa Bosworth Bowen ✠ Maquoketa, Iowa; Albany (N. Y.) Medical College, 1868; Civil War veteran; formerly bank president; aged 83; died, April 16.

John L. Loomis ✠ Portland, Ore.; University of Colorado School of Medicine, Denver, 1911; aged 43; died, April 19, at his home in Multnomah.

George Heigert Green ✠ Spokane, Wash.; University of Minnesota Medical School, Minneapolis, 1906; aged 51; died, March 5, of a fractured skull.

Thaddeus O. Joyner, Severn, N. C.; University College of Medicine, Richmond, 1899; aged 49; died, March 21, at Suffolk, Va., of pneumonia.

John Calvin Cort, Clairton, Pa.; University of Maryland School of Medicine, 1885; aged 65; died, April 28, of valvular heart disease.

Frank E. Morgan, Upland, Ark.; Medical Department University of Louisiana, New Orleans, 1874; aged 74; died, February 22.

Elias C. Logsdon, Janesville, Ohio; Starling Medical College, Columbus, 1882; aged 71; died, April 5, following a long illness.

William Francis Scatterday, Columbus, Ohio; Columbus Medical College, 1892; aged 60; died, April 17, of heart disease.

Henry H. Proctor, Russellville, Ky.; Meharry Medical College, Nashville, Tenn., 1902; aged 53; died suddenly, April 4.

Henry L. Burnett, Raleigh, Ill.; Missouri Medical College, St. Louis, 1881; aged 76; died, April 21, of carcinoma.

Charles H. Tobie, Mechanic Falls, Maine; Medical School of Maine, Portland, 1880; aged 76; died in February.

Correspondence

"POSSIBILITY OF RECOVERY FROM DIABETES UNDER INSULIN"

To the Editor:—In THE JOURNAL, April 18, there is editorial reference to an anatomic study of the pancreas, made by Boyd and Robinson, in a diabetic boy, who died from an accident. Under an insulin regimen his carbohydrate tolerance had increased "threefold," with corresponding improvement in his general physical condition. Changes were seen that were interpreted as evidence of regeneration of the cells of the islets. It is presumed, therefore, that the insulin treatment, by relieving the strain placed on the already functionally deficient islet system, allowed the new islets to develop and assume their normal functional capacity.

I am convinced that this should be interpreted as anatomic evidence of progress toward recovery. Early favorable cases will recover under insulin, and increased carbohydrate tolerance should be interpreted on an anatomic basis.

In 1904 (*Am. J. M. Sc.* **3**:287-307 [Aug.] 1904) I attempted to show that the islands of Langerhans were capable of undergoing a true compensatory hypertrophy, or that the development of new islet tissue might occur, under various circumstances. Among the cases presented at that time was one in which there had been no glycosuria nor clinical symptoms of diabetes, though the islet tissue was found to be largely involved in a hyaline degeneration process, the remaining, apparently healthy islets having undergone an immense hypertrophy.

In an attempt to explain this interesting finding, the following observations were made (p. 305):

> The nonoccurrence of diabetes in this case may be explained by the assumption that the greatly enlarged, unaffected islands of Langerhans have assumed the lost or limited function of the affected ones. . . . This case not only illustrates that a marked hyaline degeneration of the islands of Langerhans can occur without producing glycosuria, but furnishes additional proof of the propensity of these structures to undergo a compensatory hypertrophy. There is a possibility that sugar had at some time appeared in the urine, but had disappeared by the assumption of the healthy islands of Langerhans of the additional labor placed upon them.

Again:

> Such a possibility is also suggested in those cases of diabetes in which the sugar content of the urine becomes lessened or even disappears after varying lengths of time. Furthermore, in those cases in which a cure is effected by proper dieting, the modus operandi may be explained in a similar way. . . . One may assume that during the process of dieting the healthy islands of Langerhans have undergone a sufficient hypertrophy to compensate for the decrease of functional activity in the unhealthy ones.

JOSEPH C. OHLMACHER, M.D., Vermilion, S. D.

COMPLEMENTARY FEEDING OF NEW-BORN

To the Editor:—With the welfare of the community at heart, physicians are quick to seize on anything that may assist in the relief of suffering and the prolonging of life. Complementary feeding of new-born babies during the first two weeks of life has been tried during the last two years by men in various parts of the country, and commendatory reports have been made. Only short series of cases have been reported, with one exception. In none of these reports have the records of the babies been followed after their discharge from the hospital. There are, therefore, no data available as to whether these babies surpass in any way those that have had no complementary feeding during the first two weeks.

The weight at the end of the first two weeks should not be accepted as a criterion of success. We are not raising pigs for the market. Other factors aside from weight must be considered. Furthermore, there should be definite and sufficient reasons for the complementary feeding of these babies during the first two weeks of life. Merely to make them gain weight faster is not a sufficient reason in itself. Authorities agree that the average normal baby loses about 9 ounces during the first week or ten days. This loss in weight is attributed to the loss of vernix caseosa, meconium, and the general drying out process. Few babies suffer from this slight temporary loss if allowed plenty of water. This loss not only does no particular harm, but, on the other hand, does good. These babies become hungrier and nurse more vigorously. The vigorous nursing furnishes strong stimulation to the nervous and vascular supply of the breast, and will assist the establishment of lactation, all other things being equal.

When babies are given complementary feedings and fed to capacity, as some authors suggest, after first nursing on the breast, two conditions are produced that are a positive menace to ultimate breast feeding. First, the baby learns how easy it can get its fill from the free flowing bottle. Second, it is so satisfied that at the next nursing it will nurse the breast with indifference. This insufficient, weak, indifferent nursing predisposes to drying the mother's breast The truth of the old saying "If you want to dry up the mother's breast just allow the baby the bottle part of the time" is proved in these cases.

Some authors have reported that 90 per cent. of the babies given complementary feedings were discharged from the hospital on the breast alone. This is true because these babies cannot walk to the diet kitchen and get the bottle for themselves; but they have learned the easy bottle habit.

During the first days after the mother reaches home, the milk supply is lessened by the strain of going home, and by the strain of new responsibility. The babies will not nurse vigorously enough to stimulate the nervous and vascular supply of the breast, which is essential to normal lactation. They have learned that there is an easy way, the bottle. They cry long and loud; the mother, in desperation, returns to the bottle, and her breasts dry up in a few days or weeks.

I have had opportunity to follow some of these cases from a hospital in which complementary feeding was a routine. It is perfectly alarming to see the great number of these healthy young mothers hasten to use the bottle within two or three days after returning home from the hospital. In most of these instances the complementary feeding in the hospital was the direct cause of the immediate use of the bottle at home. There is, however, one general group of cases in which complementary feeding during the first two weeks of life is justifiable. It is the group including premature infants, the very weak and the injured babies. These, of course, are unable to nurse the mother's breast. They, therefore, should receive complementary feedings until they are strong enough to nurse of their own accord. In the meantime the mother's breasts should not be neglected, but a strong baby should be borrowed and put to her breast regularly in order that a sufficient supply of breast milk may be developed and maintained until the mother's own baby is able to take the breast in the natural way.

Some of our able pediatricians have published papers on complementary feeding. Under their skilful direction, little harm may come from this system of complementary feeding during the first two weeks. However, it is true that by far the greater percentage of babies are fed by the general practitioners who are not particularly interested in the feeding of babies. They hear or read these papers of reputable men, and are tempted to try complementary feeding because it has been recommended by good men. I find it being commonly tried, not only in hospitals but with those babies that are delivered in the home. Far too often the result is that

the baby goes on artificial feeding when it could have been kept on the mother's breast. I am not unmindful of the fact that there are some mothers who, because of the delicate condition of their health or unstable nervous system or deficient nutrition, are unable to nurse their babies properly. It is a mistake, however, to overpersuade these mothers to nurse their babies when it would be far better both for the mother and for the baby if it were put on a rational artificial diet.

The science of feeding babies is well perfected now as compared with a few years ago, yet normal mother's milk for a normal baby, all other things being equal, is far superior to artificial feeding even in the hands of our most expert pediatricians. GUY L. BLISS, M.D., Long Beach, Calif.

PREGNANCY SOON AFTER PREVIOUS LABOR

To the Editor:—Relative to Dr. W. J. Le Rossignol's report of pregnancy occurring soon after previous labor (THE JOURNAL, April 25), I report the following case: Mrs. B. was delivered of a normal boy, weighing 11 pounds (5 kg.), Jan. 22, 1923, and again delivered of a boy, weighing 10½ pounds (4.7 kg.), Nov. 1, 1923. The parents are American born, of English descent. The mother, aged 38, has given birth to eleven children. In the present instance, nine months and ten days elapsed between the birth of two fully developed, normal babies. LEE O. GREENE, M.D., Pea Ridge, Ark.

"MALARIA TREATMENT OF PARESIS"

To the Editor:—I have read the letter of Dr. M. K. Amdur of Cleveland (THE JOURNAL, May 2, p. 1375) commenting on my article in THE JOURNAL, April 11, on the malaria treatment of paresis. Since my article was written, a second group of forty-seven patients with paresis, has been treated, and the inoculations were made practically as described by Dr. Amdur, except that none were made intravenously. In addition, those who failed of inoculation in the first group reported and those who were still living were reinoculated. In spite of this there were thirteen patients who failed to develop malaria. Of the second group mentioned, two were inoculated with infected mosquitoes. Of these two, one had malaria and the other did not.

I differ with Dr. Amdur's statement about the nontransmissibility of artificial malaria. It is not uncommon for asexual forms of the parasite in the human blood stream to become sexual forms under proper environmental influences, such as those developed after the patient has had malaria for some time and begins to develop a resistance to the disease. Furthermore, it has not been definitely proved that the sexual forms are entirely absent in these cases. There is no known reason that would operate to prevent these gamete forms in the first generation; and if patients in this stage were exposed to the anopheles mosquito, the life cycle of the parasite would certainly go on undisturbed. This opinion is shared also by Dr. G. F. Clark of the United States Naval Hospital, Washington, D. C., and Dr. P. A. O'Leary of the Mayo Clinic, who have had a large experience, both clinically and in the laboratory, with malaria. Professor Wagner-Jauregg was apparently also of the same opinion, as he reported that in his clinic he was careful to keep the patients isolated in carefully screened wards.

In the Saint Elizabeth's Clinic we permitted the individual patient to have as many paroxysms as his physical condition seemed to permit, with safety. I believe that the reason for the apparent arrests in these cases is the repeated, sudden, brief high temperature produced by the malarial paroxysms, which kills the spirochetes in the cerebral cortex. If this is true, it would then seem that the greater the number of times this heat was applied, the more complete would be the eradication of the spirochete. There is no reason for stopping the paroxysms after the twelfth, if close observation indicates that the patient can readily stand more.

While I have not tried to provoke malaria, in the cases of inoculation failure, by the injection of milk, vaccine or other foreign proteins, I am nevertheless interested in Dr. Amdur's suggestion relating thereto and will probably try it.

I am heartily in accord with the opinion that this treatment should be used only in a well equipped institution and given by trained men who are thoroughly acquainted with general paralysis as well as with malaria, and it is of such an environment I wrote when I stated that this method of treatment is easily controlled and with ordinary hospital care should present no serious difficulty or constitute an unusual risk. WATSON W. ELDRIDGE, M.D., Washington, D. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

GLYCOSURIA DURING PREGNANCY

To the Editor:—Mrs. L., a fine, large, healthy-looking woman, expects to be confined, April 30, with her fourth child. She has a small enlargement of the thyroid. Examination of the urine reveals a specific gravity of 1.010; slight acidity, and absence of albumin. The first examination showed a decided trace of sugar, the next none, and the last two a decided amount. I put the patient on a nonsugar diet, but thus far there has been no benefit. What treatment should I give, and what is the significance of the findings? J. B. M., Indiana.

ANSWER.—This answer presupposes that the sugar to which reference is made is glucose; hence a test (fermentation or other), should be made to determine whether or not the sugar is glucose.

In a pregnant woman who is on a general diet, the presence of glucose in the urine does not necessarily mean diabetes, because nearly all pregnant women, when given a moderately large amount of carbohydrates, especialy sugar, show sugar in the urine, even when the blood sugar is within normal limits. In all pregnant women, when glucose is found in the urine, the amount of sugar in the blood should be determined. This is usually done in the morning before breakfast. If the blood sugar content is higher than 0.18 mgm. per hundred cubic centimeters of blood, the patient is probably diabetic and should be treated as having diabetes. If the blood sugar content after a period of fasting is normal, the patient most likely does not have diabetes; but a further test is necessary. Immediately after blood is drawn for the first test, the patient is given 100 gm. of glucose by mouth, and blood and urine specimens are collected at the end of a half hour, one hour, two hours and three hours. If the patient does not have diabetes, the blood sugar will be found to increase in the half hour and hour specimens and then return to approximately the amount found in the first specimen of blood. If the patient has diabetes, there will be a progressive rise in the blood sugar content even after three hours, and sugar will most likely be found in the urine. If the glucose test does not produce a hyperglycemia, the patient should be placed on a low carbohydrate diet; but the restriction should not be marked. With the use of insulin, patients can be given fairly large amounts of carbohydrate.

Since Mrs. L. has sugar in the urine even on a sugar-free diet, unless she is eating a great deal of other carbohydrates, she perhaps has diabetes. However, blood studies, with and without the ingestion of 100 gm. of glucose, should be made to determine this definitely. If Mrs. L. has diabetes, the pregnancy should be disregarded and the diabetes treated. Since the patient has had three children she will most likely have an easy, spontaneous labor. If, however, operative procedures must be undertaken or an anesthetic given, it may be advisable to give insulin both before and after operation to prevent acidosis. Even if no untoward symptoms occur

before or during labor, the patient should be carefully studied after delivery to find out whether she has diabetes, for there is no doubt that a true and sometimes fatal diabetes mellitus may show itself for the first time during pregnancy.

SULPHUR FROM AUTOMOBILE TIRES

To the Editor:—A patient came in complaining of irritated eyes—lacrimation, etc.—inflamed throat and irritating cough, and said that she had a sulphur taste in her mouth. She stated that her whole house was pervaded with a sulphurous, irritating oder, which had penetrated everything. This she thought was due to the fact that some vacant rooms in the house were being used for the storage of about 300 automobile tires. Kindly give me your opinion on this. If there is any available literature on the subject please refer me to it.

EDWARD TRIPPEL, M.D., O'Fallon, Ill.

ANSWER.—The storage of automobile tires gives rise to dusts made up of soapstone, sulphur and compounds containing sulphur and lead. Sulphur dioxid is formed from the slow oxidation of sulphur and sulphur dioxid. The dusts and the gas would rapidly spread themselves through any closed space, and might account for the trouble referred to.

Kober and Hayhurst in "Industrial Health," p. 661, state that an atmosphere containing sulphur dioxid causes a transient irritation of the mucous membranes of the respiratory organs and of the eyes. They further state that in the more severe cases there is a spasmodic cough with secretion of tenacious, often blood-tinged mucus, and that protracted exposure to high concentrations result in livid discoloration of the mucous membranes, bronchial catarrh, croupous angina of the bronchi and their branches, and inflammatory areas in the lungs as well as digestive disturbances.

Hope, in "Industrial Hygiene and Medicine," p. 425, quotes Rambousek's statement that sulphur dioxid may cause conjunctivitis.

With reference to the dusts previously mentioned, Kober and Hayhurst (p. 158) state that the inhalation of mineral dust develops pneumoconiosis, which may eventuate in pulmonary tuberculosis.

ULTRAVIOLET RAYS

To the Editor:—I wish to ask you for accurate information about the Kromayer Lamp, and also a new light which is being made in Chicago and I think goes under the name of the Johnson Therapeutic Light. I am being continually solicited by salesmen who claim wonderful results in the hands of other men whose names bear considerable weight, and I am just writing you to find out what you can say of these lamps, as I do not wish to invest in apparatus that is not efficacious. The Johnson Light is apparently an ordinary arc light, and the carbons are reamed out in the center and filled with a core of some secret chemical substance which they claim produces exactly the sunlight. They are selling these lights for six hundred and some dollars with a guarantee that at the end of thirty days the $200 deposit which is necessary will be refunded if the light does not do what they claim. It is stated that this light far outweighs in importance any other light; that it will effect a cure of tuberculous laryngitis, chronic otitis media, etc. Much the same sort of thing is claimed for the Kromayer Lamp, but each salesman declares that his competitor's lamp is not worth consideration when one can secure so good a lamp as his. If either of the lamps is worthy of consideration, I naturally want the best one. Will you be good enough to advise me at once?

D. H., M.D., San Diego, Calif.

ANSWER.—Authorities differ somewhat as to the relative merits of carbon arc lamps and mercury quartz lamps. The Danish arc lamp is used for small electrodes, and draws more than 50 amperes of current. In using this lamp, concentrating quartz lenses are advocated, such as are not available in this country. The Johnson Lamp referred to uses only from 3½ to 5 amperes, and therefore probably does not duplicate the volume of ultraviolet rays generated by the Danish lamp. Dr. A. B. Pacini is responsible for the statement that sunlight supplies 7 per cent. of ultraviolet rays, the mercury vapor quartz lamp 28 per cent., and the carbon arc lamp, both Danish and American types, 5 per cent.

BLEACHING HAIR AFTER DYEING WITH PARAPHENYLENDIAMIN

To the Editor:—Is there any reagent to bleach or remove the black dye of hair formed by paraphenylendiamin? Please omit name.

———, M.D., Reading, Pa.

ANSWER.—We do not know of any reagent that will bleach or remove the black dye of hair formed by paraphenylendiamin.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, June 15-18. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

DELAWARE: Wilmington, June 16-18. Sec., Reg. and Homeo. Bd., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Tampa, June 15-16. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.

GEORGIA: Atlanta, June 10-12. Sec., Dr. C. T. Nolan, Marietta.

GEORGIA: Augusta, June 2-4. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 23-25. Supt. of Regis., Mr. V. C. Michels, Springfield.

IOWA: Iowa City, June 4-6. Sec., Dr. Rodney P. Fagen, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 16. Sec., Dr. Albert S. Ross, Sabetha.

KENTUCKY: Louisville, June 9-11. Sec., Dr. A. T. McCormack, State Board of Health Bldg., Louisville.

MARYLAND: Baltimore, June 16-19. Sec., Reg. Bd., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MARYLAND: Baltimore, June 9-10. Sec., Homeo. Bd., Dr. J. S. Garrison, Ten Hills, Baltimore.

MICHIGAN: Ann Arbor, June 9-11. Acting Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MICHIGAN: Detroit, June 15-17. Sec. Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, June 16-18. Sec., Dr. T. S. McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 23-24. Sec., Dr. F. J. Underwood, Jackson.

MISSOURI: St. Louis, June 23-26. Sec., Dr. James Stewart, Capitol Bldg., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: Written examinations in Class A medical schools. Parts I and II, June 24-26. All applications for this examination must be made on or before May 25. Sec., Dr. J. S. Rodman, 1600 Walnut St., Philadelphia.

NEBRASKA: Omaha, June 8-10. Supt., Dr. W. H. Wilson, Lincoln.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Alexander Macalister, State House, Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 22-25. Sec., Dr. Harold Rypins, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 22-26. Sec., Dr. Kemp P. B. Bonner, Morehead City.

OHIO: Columbus, June 9-12. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

RHODE ISLAND: Providence, July 2-3. Dr. Byron W. Richards, State House, Providence.

SOUTH CAROLINA: Columbia, June 23. Sec., Dr. A. Earl Boozer, 505 Saluda Ave., Columbia.

TEXAS: Austin, June 23-25. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

VERMONT: Burlington, June 24-26. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 23-26. Sec., Dr. J. W. Preston, Shenandoah Life Bldg., Roanoke.

WISCONSIN: Milwaukee, June 30, July 1-2. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

WYOMING: Cheyenne, June 8-10. Sec., Dr. J. D. Shingle, Citizens Bank Bldg., Cheyenne.

Ohio January Reciprocity Report

Dr. H. M. Platter, secretary, Ohio Medical Board, reports that 3 candidates were licensed by reciprocity at a meeting held at Columbus, Jan. 6, 1925. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1914)	Illinois
St. Louis University School of Medicine		(1923)	Illinois
Meharry Medical College		(1923)	Kansas

Dr. H. M. Platter also reports that 13 candidates were licensed by reciprocity at a meeting held at Columbus, April 7, 1925. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Harvard University		(1915)	Iowa
University of Michigan Medical School		(1923, 2)	Michigan
University of Minnesota		(1923)*	Minnesota
Ensworth Medical College		(1907)	Kansas
Fordham University		(1914)	New York
New York Homeopathic Med. Coll. and Flower Hosp.		(1921)	New York
University of Pennsylvania		(1910)	Penna.
University of Pittsburgh		(1912)	Penna.
Meharry Medical College		(1923)	Tennessee
McGill University		(1920)	Penna.
University of Toronto		(1921)	Michigan
University of Budapest, Hungary		(1911)†	New York

* This candidate has completed his medical course and received the degree of M.B., and will receive his M.D. degree on completion of a year's internship in a hospital.

† Graduation not verified by the American Medical Association.

Book Notices

FUNDAMENTAL PRINCIPLES IN TREATMENT. By Harry Campbell, M.D., B.S., F.R.C.P., Senior Physician, West End Hospital for Nervous Diseases. Cloth. Price, $4. Pp. 477. New York: William Wood & Company, 1924.

This volume opens with personal remarks on the education of the physician, presumably based on the author's own experience and having particular reference to conditions in England. The next few chapters deal with the physician's personality, and contain a number of standard aphorisms, all of which have exceptions that prove them true. The physician is told that he must have tact and good physique, and that he must inspire confidence and be consistent and speak authoritatively, which is no doubt true—but not always practicable and certainly somewhat beyond the limits of human nature. He is told to be very friendly with the physicians in his vicinity, and if they are not friendly to move away. He is also told that to have sympathy is not enough: that he must be genial also; but we doubt whether anything is more preposterous than a carefully practiced bedside manner. He is urged again to indulge in humbug whenever it is in the interest of the patient. The author then follows with general chapters on habit in relation to treatment, on rationalism and empiricism, and on fads and faddists. In all these he indulges in many trite remarks, but seldom in any statement that is unique or especially stimulating. Some practical chapters are those on psychotherapy, on the therapeutics of fresh air, on clothing and on exercise. As a whole, the volume is one that may be used for its helpful hints by the young physician, but will seem rather elementary and trivial to the man of any considerable experience.

A TEXT-BOOK OF PATHOLOGY. By W. G. MacCallum, Professor of Pathology and Bacteriology, the Johns Hopkins University. Third edition. Cloth. Price, $10. Pp. 1162, with 575 illustrations. Philadelphia: W. B. Saunders Company, 1924.

During the four years since the appearance of the second edition of MacCallum's textbook, particular attention has been paid to rickets, diabetes, epidemic encephalitis and a few other conditions. In preparing a revision, the author has not found much that demanded rewriting, but has carefully attempted to add important contributions to the literature and to express any changes in opinion resulting therefrom. His textbook is the outgrowth of an extensive teaching experience, and has found a welcome reception in many institutions of teaching. The illustrations, many of them in colors, are most valuable. Unfortunately, no standard rule has been adopted for the references to periodical literature, so that many of them appear without titles and many others are even more incomplete. A section on light and other radiant energy presents a brief outline of our present knowledge, based largely on the excellent reviews that have appeared, in *Physiological Reviews.*

ENTZÜNDUNG, THROMBOSE, EMBOLIE UND METASTASE IM LICHTE NEUERER FORSCHUNG. Von Prof. Dr. Paul von Baumgarten. Paper. Price, $1.30. Pp. 208. Munich: J. F. Lehmans, 1925.

The inherent relations between inflammation, thrombosis, embolism and metastasis give this book a gratifying unity. Each subject is considered from an historical point of view, and the literature is discussed critically. After reviewing the results of studies by himself and others in these particular fields, the author formulates a conception of each of these pathologic processes based on the newer investigations. The book, therefore, is not a bare rehearsal of facts but an attempt to make an interpretation of those which have stood critical examination. For this reason it is especially satisying. The author defines inflammation as a pathologic process induced in living tissue by certain mechanical, physical, chemical and microparasitic (infectious) injuries; it is composed of two factors: on the one hand, the alterations in the blood circulation and tissue nutrition resulting from the action of the injurious agent, and, on the other, the reaction of those tissues which have retained their vitality, to the irritant action of the causative agent. There are ten closely printed pages of bibliography on inflammation; eight on thrombosis, and seven on embolism and metastasis. The text is not, on the whole, difficult to read in spite of the author's tendency to use long and involved sentences. The almost monotonous repetition of the same phrases is perhaps an advantage to those whose vocabulary of German words is not very extensive. The author was formerly professor of general pathology and pathologic anatomy at Tübingen, and is now at Dresden.

A SYNOPSIS OF SPECIAL SUBJECTS FOR THE USE OF PRACTITIONERS. Diseases of the Skin. By Henry C. Semon, M.A., M.D., M.R.C.P., Physician for Diseases of the Skin, Royal Northern Hospital. Obstetrics and Diseases of Women. By Malcolm Donaldson, M.B., B.Ch., F.R.C.S., Assistant Physician Accoucheur, St. Bartholomew's Hospital. The Ear, Nose and Throat. By Archer Ryland, F.R.C.S., Surgeon, Central London Throat, Nose, and Ear Hospital. The Eye. By J. F. Cunningham, O.B.E., F.R.C.S., Surgeon, Central London Ophthalmic Hospital. Cloth. Pp. 376. London: H. K. Lewis & Co., Ltd., 1924.

The preface states that the aim of this volume is not to achieve literary or educational distinction but to offer practical information in small compass. The classification is logical, and the make-up (type, spacing, indentions, subdivisions) easy to follow. Each division has a separate index.

NOUVEAU TRAITÉ DE MÉDECINE. Publié sous le direction de MM. G. H. Roger, Fernand Widal, P. J. Teissier et Secrétaire de la rédaction: M. Garnier. Fascicule XIV. Appareil digestif. (Intestin). Pathologie de l'intestin, par F. Trémolières et L. Caussade. Affections gastro-intestinales des nourrissons, par P. Nobécourt. Vers intestinaux, par Ch. Joyeux. Ankylostomiase, par E. Perroncito. Sémiologie des fèces, par René Gaultier. Pathologie du rectum et du colon terminal, par Bensaude. Boards. Price, 45 francs. Pp. 579, with 175 illustrations. Paris: Masson et Cie, 1924.

This fascicle completes the gastro-intestinal canal, No. XIII taking up the mouth, pharynx, esophagus and stomach. Most of the contributors are well known. A trifle more than half the total space is devoted to intestinal diseases in general, including constipation, diarrhea, ileus, appendicitis, tuberculosis and tumors. The account of ancylostomiasis is admirable, as might be expected from its author, Perroncito, who has devoted especial attention to it for more than forty years. Other notable sections are those on examination of the feces, by Gaultier, who published a large work on the same topic as far back as 1907, and the final one on the rectosigmoid diseases by Bensaude. The latter points out that this account is a novelty in French treatises on medicine. The attempt to cover all affections from the pylorus to the anus in less than 600 pages may be said to be very satisfactory. When operative treatment is referred to, no details are given, of course, in this treatise on medicine, and recourse must be had to surgical works. The paper is unusually good, and the halftone illustrations much better than we are accustomed to in French books. The plates are reproductions by the four-color process of various pathologic specimens, and are remarkably artistic, as well as true to life.

TRANSACTIONS OF THE INTERNATIONAL CONFERENCE ON SANITARY ENGINEERING, LONDON—1924. Cloth.

The subjects discussed at this conference included administrative quesions, the prevention of malaria and yellow fever, control and purification of water supplies, house sanitation, and methods of sewage disposal. Among the last, chief consideration was given to the activated sludge process and the utilization of dried sludge. The volume is noteworthy in that it records opinions and practices on the important phases of public sanitation from all parts of the world.

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON HEALTH PROBLEMS IN TROPICAL AMERICA, Held at Kingston, Jamaica, B. W. I. By Invitation of the Medical Department of the United Fruit Company. Cloth. 1924.

From July 22 to Aug. 1, 1924, the United Fruit Company held a conference on tropical diseases in Jamaica; most of the men who have contributed largely in the control of such diseases took part in the extensive program. The collected report constitutes a valuable reference work, which defines the present state of our knowledge.

Miscellany

SCIENTIFIC THERAPY AND PHARMACEUTIC RESEARCH *

MORRIS FISHBEIN, M.D.
Editor, The Journal of the American Medical Association
CHICAGO

The growth of scientific therapeutics is as romantic a series of tales as ever captured the attention of a novelist; it is filled with dramatic incident. What could be more dramatic than the struggle of Paul Ehrlich until his success was crowned by the discovery of arsphenamin? What great climax in human life ever approached the scene in which Pasteur demonstrated to the doubters of France that the sheep that had been inoculated lived and those that had not had preventive injections against anthrax died? Were ever human sympathies more touched than by the story of the fight to get antitoxin into stricken Nome? And equally dramatic, though perhaps more tragic, is the story of the discoverer whose new preparation seems to him to be a marvelous specific, but who passes at last, after several years of trial, into the oblivion that is the fate of those who fail. It may be true that the romance of medicine, and especially the history of materia medica, will show many more failures than successes. Within our own memories are the hundreds of cures for tuberculosis, for cancer, for locomotor ataxia and for general paralysis that are now buried beneath tons of soil with victims that they were to cure and, in some cases, with the dollars of the manufacturers who thought they would cure. But above them rise the monuments to diphtheria antitoxin, to arsphenamin, to quinin, to digitalis, to ether, to the local anesthetics, to morphin and to the many other remedies that have alleviated pain and illness and postponed death.

THERAPEUTIC NIHILISM

In writing the history of our progress in scientific therapeutics, we like to believe that a proper attitude toward the claims made for remedies began to develop with the beginning of the twentieth century. Indeed, a study of the origin of the phrase "therapeutic nihilism" would probably show the beginning of its vogue at about that time. But therapeutic nihilism is not the property of any recent or single period in our history. There were the high priests of Israel, who doubted the healing virtues of the golden calf; there were the biting aphorisms of Celsus, who questioned what he could not see; there were even the experiments of Albrecht von Haller, who anticipated Hahnemann in the desire to test drugs to see what they would do before admitting that they would do anything. In fact, the nihilism of our contemporary period is not an attempt to destroy belief in the value of drugs, but an attack on an outrageous commercialism in the sale of therapeutic substances, which unfortunately, perhaps, serves also to undermine to some extent belief in all drug therapy. It seems likely, rather, that the growth of therapeutic nihilism in general was the result of the great advance in our knowledge of the causes and pathology of disease and the increasing attention paid to these matters rather than to treatment, in our medical schools. It has been said that medicine as an art of healing the sick has given place to medicine as the scientific study of disease.

Today the trend of opinion is turning against therapeutic nihilism; there is a call for the return of that older type of physician in family practice whose primary function was the alleviation of pain and the healing of illness. And that newer trend is the result not only of a changing philosophy as to the functions of the physician but equally to that very scientific study which, for a few decades, caused some to doubt the virtues of their remedies.

In the materia medica of fifty years ago, drugs were classified by certain definite effects which they produce on the system of the human body: stimulants, depressants, cathartics, diuretics, sudorifics, germicides and parasiticides. Finally, there were the alteratives, which presumably produced certain effects, but just how or why no one knew. The therapy of today includes such of these alleviators of pain and these modifiers of the physiology of the body as scientific pharmacology has shown to have real merit. But it also attacks disease by providing substances that produce the death of the specific organisms responsible for disease, by activating the tissues of the body to fight disease and by providing substances that fill functions in which the tissues are apparently deficient.

THE VIS MEDICATRIX NATURAE

There seems to be inherent within the cells of all living substances a "will to live," a tendency toward recovery from disease, the *vis medicatrix naturae*. This salutary activity of the organism is the secret of the success of those cults that occupy the twilight zone of medical practice. "The vis medicatrix," says Sainsbury, "has floated many a false system of medicine, including some very heavy craft: *it* has cured, *they* have claimed." On the *vis medicatrix* are based the alleged successes of such cults as chiropractic and Christian science, of theosophy, of Coueism, of zonetherapy and, indeed, of every cult that is essentially a system of treatment based on a single idea as to the causation of disease without relation to the proved facts of medical science. These cults, known as the nonmedical, or drugless, cults, have delayed scientific progress through their attacks on scientific experimentation, particularly on that which involves the use of animals, and unquestionably have been responsible for the spread of epidemics and for a certain proportion of mortality from disease. Granted that there are instances in which the wrong use of drugs may have hastened death, there unquestionably are many more instances in which the lack of the medicament—the failure to apply the remedies of science—has resulted in anguish to the sufferer and in the spread of disease.

It must not be thought, however, that medicine has been sinless in its consideration of this special property of the living cell. Until the science of biometry taught us something about the evaluation of clinical statistical evidence, we were far too ready to give ourselves the credit for that certain percentage of cases of disease that recover not only without treatment but frequently in spite of treatment. The patient is given a remedy and improves. The clinician considers that the patient improves, not through the *vis medicatrix naturae*—the snare that easily deludes the cultist but should not entrap the scientist—but because he has been given the remedy. If scientific medicine had not recognized this difficulty over many years, the saying "post hoc ergo propter hoc" would not have become a proverbial sneer at the conclusions of clinical medicine.

EVALUATING CLINICAL EVIDENCE

Edwin Bramwell, professor of clinical medicine in the University of Edinburgh, recently remarked succinctly that "the ultimate proof of the value of any remedy can only be established at the bedside. . . . Hypothetical considerations and the results obtained by laboratory workers are invaluable," he says, "because of the possibilities and indications they suggest, but the clinician is responsible for the final evidence." This is a statement which is invariably greeted with applause by those whose proposed remedies have met

* Address before the American Drug Manufacturers' Association, New York, April 23, 1925.

with disaster when submitted to the scientific experimentation of the pharmacologist in the laboratory. And their applause no doubt is based on the fact that they have on hand hundreds of letters from so-called clinicians to prove that the remedy which the pharmacologist found unscientific and unreliable has met in their hands with remarkable success. Nothing is so difficult to evaluate as clinical evidence. Sir William Osler wrote: "It is so much easier to believe than to doubt, for doubt connotes thinking and the expenditure of energy and often the disruption of the status quo. . . . In the matter of treatment, the placid faith of the believer, not the fighting faith of the aggressive doubter, has ever been our besetting sin." Nevertheless, as Dr. H. M. Dale of the British Medical Research Council has asserted, the intelligent use of a drug does not mean that the practitioner must have a full scientific appreciation of the mode of the drug's action. Who knows today the manner of action even of quinin, a remedy established by centuries of clinical use? Who has even an inkling of the processes involved in roentgen-ray and radium therapy? Who can even approximate the facts regarding the activity of the vitamins? And this being the case, since all these substances are without doubt potent, who would say that the use of such substances should be avoided until the complete explanation becomes available? Scientific medicine does not ask proofs of this character. It does ask that the use of the remedies be established within the limits of the science of pharmacology, and that the clinical evidence be so controlled as to meet the ordinary tests applied to scientific evidence.

The pharmacologist considers first the composition of the remedy and the established knowledge of the past as to its various components. He then attempts by experiments on animals, under controlled conditions, to determine its effects. Having satisfied himself by animal experimentation that the remedy has definite virtues, and that it is harmless in the quantities used, he turns it to the alleviation and control of disease in man. Now this matter of possible harm to the patient from an unestablished remedy is a most important one. A time honored aphorism, "Primum non nocere," expresses in three Latin words the caution to the physician, "First do no harm."

There was a time when our therapy was dominated by faith, by incantations, by charms and by symbolism. In the dark ages of medicine the words that went with the concoctions of dried beetles, snake oil, mandrake root and herbs brewed in the light of the moon at midnight were considered quite as important as the remedies themselves. From this we passed into the age of the "dreck apotheke," with its combinations of all the noxious excretions and secretions known to man. Against this Hahnemann reacted, and no doubt the homeopath with his dilutions of drugs to the two millionth part did less harm than Rush's thunderbolt with its massive doses of calomel and jalap. William Withering had, of course, established digitalis; Jenner had established smallpox vaccination; mercury had been found for syphilis—a true science of pharmacology was beginning to win its way. A Lister showed the importance of antisepsis, and the possible harmfulness of too rigid antisepsis was replaced, through application of the discoveries of Pasteur, by a satisfactory asepsis. And so we came to the new era of therapy introduced by Paul Ehrlich, the era of specific chemotherapy.

In this transition over the centuries, the position of the physician in relation to his patient changed also. Look at the pictures drawn by famous artists. Here is the doctor of Luke Fildes' famous picture; he sits at the bedside of the child dying of diphtheria. Possibly he will decide a little later to do a tracheotomy, to try to suck out the membrane, or to prescribe a little tincture of iron. He is, after all, doing no harm. But if the picture were of our day he would be doing a great deal of harm by his inactivity. He ought to be taking a throat culture to confirm his diagnosis of diphtheria, and he ought to be injecting diphtheria antitoxin, and possibly putting in his spare time by immunizing the other members of the family, who ought not to be in the room anyway. Our aphorism "Primum non nocere" means "do no harm by withholding a proper remedy" just as much as it concerns the giving of a harmful remedy. Let us assume, for example, that one withholds atropin in an inflammation of the eye, and thereby permits permanent scarring and loss of eyesight. Here the one responsible for treatment does as much harm as he would have done if he had given the wrong drug. There is a need for "positive treatment," which means the employment at the earliest possible moment of those remedies which have been established as beneficial in the condition concerned.

SPECIFIC THERAPY AND CHEMOTHERAPY

If ever the warning "Primum non nocere" were needed in medical science, it is needed in the judgment of the new and potent remedies which science has developed for the treatment of disease. We know that insulin acts because it can act for harm as well as for good, and this applies as well to arsphenamin, to antitoxins for scarlet fever and diphtheria, to our sedatives, and to our dye substances. These preparations must eliminate the invading organism but must not harm the patient. We have had presented to us a long series of numbered combinations of metals with organic radicals, and of metallic substances with dyes, and similar combinations. Such terms as "606," "909," "Bayer 205," "Fourneau 309," and "Mercurochrome-220," representing hundreds of trials before the achieving of even possible success, have become familiar to most physicians. In the case of some of these remedies, we find that they not only kill the organisms for which they are presumed to be specific without harming the body of the patient, but also, apparently, render the body in which they are injected resistant to other infections. In many cases the serums and extracts of the organs of such animals also exert curative effects. As can be demonstrated in the test tube, the drugs themselves do not have the power to destroy the organisms; but when these drugs are taken or injected into the body and combine with the blood and the tissues, some change takes place which results in destruction of the parasite. There are preparations of bismuth which will not act when used alone, but which become exceedingly potent when mixed with extract of liver tissue. Here the materials of the human body are the activating factor. Dale has observed that an amebic infection which readily yielded to emetin in man could not be so controlled when transferred to the cat. Something in the tissues of man that activated the emetin was absent in the tissues of the cat. Here, then, is that *vis medicatrix naturae*, that power within the body which may itself come forth some day in the form of a hormone or a vitamin or an enzyme or what not. And if it does, some manufacturer who follows the Council on Pharmacy and Chemistry will give it a new name that correctly labels its composition and is just as hard to pronounce as *vis medicatrix naturae*.

In studying the power of the body to resist and overcome disease, the impression has become firmly established that much depends on the cells being in a normal, healthy state. It is known that this condition of the cell may be modified by foreign substances injected into the body, such as nonspecific proteins; that certain poisons definitely inhibit the actions of certain cells; that substances such as insulin activate certain cells to perform unusual functions or act as catalysts in controlling reactions. Every great discovery in medical science is followed promptly by a series of investigations along similar lines, and only too often reasoning by analogy leads to therapeutic abuses or still more likely to

therapeutic fads. The discovery of such a substance as thyroxin or insulin is the warrant for the entire gamut of glandular organic extracts, singly, in mixed powders and in glandular soups. And there is as much reason for the use of some of them as there is for the belief that a kidney stew will cure interstitial nephritis. The proof that intravenous injection of one remedy will yield a positive and swift result is taken as warrant for a whole battery of self-loading, rapid-firing syringes with ammunition wagons full of ampules in reserve. It is suggested that the secret lies in the use of colloidal substances, although so far no actual knowledge is available to support the extravagant claims for the use of colloidal substances. And while we know that the vitamins do something because certain things happen when they are absent from our diet, we know little as to what might happen when any considerable amount of such substances becomes an exceedingly large part of our diet. We know that suggestion may play a large part in what we do and in what we think about what we do, in what we feel and in what we think about what we feel; and if we are Freudistically inclined, the less we think about it the better.

THERAPEUTIC ACCURACY

It would seem, then, that the prime need in therapeutics as a science is the need of all sciences; namely, accurate methods of measuring results and of evaluating effects. The lack of such methods obviously has resulted in marked differences of opinion between those who have the "will to believe" and those who demand to be shown. Consider in this connection the hypnotics and sedatives. If there were some method of measuring the value of such preparations similar to the methods that exist for determining the potency of preparations of digitalis, of parasiticides or of antitoxins, there would be no question as to the relative merits of the hundreds of preparations of this character that are available and that are being made available to the medical profession. Instead, the only scientific methods that have been elaborated for properly testing such preparations involve the interpretation of subjective phenomena with no exactitude, and the use of animal behavior tests that have little or no application to the problems of controlling pain in the human being. As a result, the clinician is besieged with the claims for hundreds of substances the names of which end in "al," including medinal, luminal, dional, barbital and neonal. So far as the various members of the barbital series are concerned, there would appear to be practically no limit to the preparations and combinations that might be derived from barbituric acid. Very likely there is a vast difference in power of action, in toxicity, in by-effects and in other particulars between the worst and the best of the series. But obviously there is a score of substances near the top of the series, therapeutically, that differ from one another but slightly; and there is today no method known to medical science for determining the exact scope of that difference. Such being the case, no body of scientific men, such as the Council on Pharmacy and Chemistry, will be able to permit unwarranted distinction between such products, and it certainly must hesitate to lend its warrant to the exploitation of any considerable number of such preparations with individual names that completely hide the source of their derivation.

THE CLAIMS FOR PHARMACEUTIC PRODUCTS

The manufacturer may well raise the question as to the extent to which purely scientific considerations may limit the number of products that are sold. Any one who has watched the development of the catalogues of various proprietary manufacturing houses knows that each organization wants to have in its list substances to meet the various indications that may arise in the practice of a physician. It even has been intimated that some firms have copied the catalogues of others. Every manufacturer wants a laxative like phenolphthalein, a sedative of the barbital series, an antiseptic similar to compound solution of cresol or to surgical solution of chlorinated soda; he wants a digitalis preparation, a tonic preparation containing iron, a bismuth preparation to be used in syphilis; an agar and oil preparation, an oil that is all his own, and so on down the list. He wants, in short, to be able to provide his representatives with a complete line, and no scientific physician will deprecate this wholly estimable desire on the part of the manufacturer. If a manufacturer has created a name for his organization that stands for reliable pharmaceuticals prepared in convenient packages, it is well that physicians recognize the worth of such a reputation and that they depend on such a manufacturer for their drug products. However, manufacturers, apparently, are not willing to sell the name of the firm alone. Furthermore, there are many corporations which deal not in complete lines, but only in specialties. Obviously, the man who is selling a specialty feels that he must make claims for such products that will convey to the physician the idea that for its purpose the specialty is far superior to the products issued as a part of the line of other manufacturers.

Notice, for example, the preposterous extent to which this tendency was carried in connection with the sale of preparations of liquid petrolatum—so-called Russian or mineral oil. Obviously, every manufacturer could find a preparation of mineral oil that would vary in its specific gravity, in its transparency or in some other minor manner from the preparation prepared by some other refiner. But when the clinical test is applied, and, indeed, when the clear light of pure reason is applied to the extraordinary claims made for such preparations, they are found in most cases to be even thinner than water. In the development of this specialty, the attempt seems to have been to find, first, some nonessential quality that would support the claims; secondly, an attractive name, and thirdly, some physicians credulous enough to believe the claims and to support them with evidence. Certainly oil, both internally and in the well, has much to answer for.

THE SCIENTIFIC INVESTIGATOR OF COMMERCE

The statements just made should not be taken in any way as a depreciation of the work of the commercial chemist and pharmaceutic investigator. I am not one who believes that it is impossible for the scientist in the employ of a large corporation to produce investigations that are on a par with the best type of investigation done in university laboratories. After all, the commercial chemist and pharmaceutist is merely the scientist of the university transported to a new environment and compelled to give thought to practical considerations that do not, perhaps, disturb him when within the cold walls of some sanctum of learning. But it is unreasonable to believe that an honest man must be dishonest in any circumstance. After all, honesty is a state of mind not the particular property of any chosen group. It is a pessimistic man indeed who believes that outside the walls of universities there exist no scientists who are not corruptible. The debt of the public to the investigators of commerce is no slight one. The research investigator in his laboratory is able to produce some new medicament like insulin or scarlet fever antitoxin or thyroxin on a scale that enables him to treat a few patients at a considerable cost. The investigator in commerce substitutes production in tons for production in grains and thereby makes available to the poorest invalid the life-saving remedy that might otherwise be given only to the wealthy few. The process that produces the remedy in the individual laboratory is, as we all know, not immediately adaptible to quantity production. The isolation of the active product is only an indication of the problems that must be

surmounted for commercial distribution. Here such matters as the mass of raw material, preservation, and convenience of dispensing must be considered. Indeed, it has been found occasionally that the method by which a product was evolved in the laboratory would not even yield a similar substance when applied on a large scale for commercial purposes, so that entirely new methods had to be devised before the product could be made available to the public. And these methods are worked out by men whose names remain hidden forever in the secrecy of the commercial world, whose names do not appear in the periodicals of scientific research, but whose contribution is, perhaps, just as great and just as important in the long run as that of the investigator who first brings the substance to medical attention.

THE OUTLOOK FOR THE FUTURE

As one looks over the accomplishments of the past, one need feel no pessimism regarding the future of scientific medical therapeutics. Such harm as is not inherent in human nature itself is slowly but surely being eliminated from the manufacture, the sale and the use of our remedies. More and more we are beginning to realize that the prime function of the physician is not the prevention of death, for death can never be prevented completely, and ultimately the mortality will always be 100 per cent.; not the raising from the dead of tissues or of human beings that have succumbed, for outside of biblical legend and the phantasies of those who claim there is no disease and who heal by the mind alone or by the laying on of hands, there is no raising from the dead—rather, the function of the physician is to range himself on the side of life, by seeking to establish those conditions which are most favorable to life. These conditions he establishes through the employment of all those agencies which, scientific experiment has taught him, have the power to modify the actions of human tissues. These agencies include not only the drugs and biologic preparations of materia medica but also heat, cold, massage, electricity, water, sunlight and the mental suggestion of our therapeutics. With these agencies he aids the power within the body to overcome disease, or he so modifies the constitutions and environment of the bacterial organisms that attack mankind that they depart either their lives or his system.

The outlook for the future in the control of disease seems to depend, therefore, first on the acquiring of more knowledge as to the biology and physiology of man, and particularly of the individual cells within the body of man; and, secondly, on a study of the natural history of disease, including particularly the biology, physiology and chemistry of the bacterial organisms that produce disease.

The finding of dye substances that are specific for certain bacteria, of antitoxins specific for certain diseases, of glandular extracts that replace missing secretions and activate latent cells to action; of substances like the phthaleins that search out certain tissues, as the liver or the kidney, or that carry antiseptic actions to certain secretions as in the case of methenamin or hexylresorcinol—these are refinements of therapeutic science that are as astounding as the radio and the wireless telegraph.

In his "Principia Therapeutica," which is to the practitioner a sort of guidebook through the Hades of therapeutic fallacies, Sainsbury opens with a dialogue between "Therapeutics" and "Pathology." The scene is the postmortem room, and the pathologist is busily engaged in examining a dead body. With the typical cynicism of the pathologist—the analytic philosopher who renders the final materialistic verdict—this necropsist begins by wondering at the faith of the physician in his drugs. Digitalis, strophanthus and spartein had been given; yet the aortic valve was narrowed, and the valves were fused and thickened. "Did you think to soften them?" asks the pathologist. The fibers of the heart muscle were stretched and degenerated. "Did you propose to make new fibers to overcome the destruction?" asks the pathologist. Fortunately, the physician is able to make a most convincing answer. "My attention took note of this only," he says, "that the heart did beat, and the circulation of the blood was maintained, however imperfectly. This rhythmic contraction of the muscle fiber had no sort of relation to those elements of degeneration within its substance—they were of death; but this was a living act, maintained in spite of all and every adverse circumstance, and to aid and abet this vital residuum, setting aside all thought of the elements of degeneration, mere mortal remains fit only for interment—this was my one endeavor."

This service to the living, this utilization of every power and every atom of scientific knowledge available to aid the power within the human body in its fight against death, commands all that the physician has to give of his learning and of his spirit. Behind him stand those who are charged with the preparation of the remedies that he is to use, and between him and them those who would help him in his hour of need to select wisely. It has been our hope that this intermediate group, represented by the scientific pharmacologists, the teachers of therapeutics, the bacteriologists, the medical writers and journalists, the Council on Pharmacy and Chemistry, might work more closely with those who prepare our remedies, so that the physician might feel safe in every instance in trusting the preparations and the statements made about the preparations of at least a considerable number of manufacturers. With such cooperation we may approach nearer and nearer to that time when the rebuke of Paracelsus to the faint hearted physician may be warranted in fullest measure.

> "Nie rede der Arzt, die Krankheit ist unheilbar—er lügt da Gott an, unsern Schöpfer; er belügt die Natur mit ihrer Ueberfülle von verhüllten Kräften und Veränderlichkeiten."
>
> "Never must the physician say, the disease is incurable. By that admission he denies God, our Creator; he doubts Nature with her profuseness of hidden powers and mysteries."

Medicolegal

Punitive Damages for Malpractice in Hemorrhoid Case

(Rennewanz v. Dean (Ore.), 229 Pac. R. 372)

The Supreme Court of Oregon, in affirming a judgment in favor of the plaintiff for damages in an amount not stated by the court, says that it was alleged in the complaint that in consideration of $200 paid to the defendant, a physician and surgeon, he agreed properly and skilfully to treat and cure the plaintiff of hemorrhoids. The defendant contended, on the other hand, that he undertook to cure the plaintiff for the $200 or to return the money, and that the plaintiff was being treated when he suddenly, and without notice, ceased taking treatments. There was testimony to the effect that, after the plaintiff had been taking treatments from the defendant at the latter's office for nearly two weeks by the injection of some drug into the hemorrhoidal tumors, the plaintiff suddenly one morning experienced a severe hemorrhage from the rectum and had to be assisted to a couch in the defendant's office. During the first day of the ensuing illness the defendant gave the plaintiff hypodermic injections in the arm, and some pills, but compelled him to lie on the couch with part of his clothing on without making any provision for his cleanliness or sustenance; and although the hemorrhage continued, he left the plaintiff to lie alone during the first night of his stay, without any attention, and during the next twenty-four

hours took no steps to arrest the hemorrhage. The hemorrhage continued until the plaintiff was too weak to stand alone, and his wife, who came on his summons, hardly recognized him. Under such circumstances, the jury was authorized to conclude that the defendant's treatment was reckless, or even grossly negligent; for after he was removed to a hospital, at the end of forty-eight hours, the plaintiff remained there about a month, required surgical operations to arrest the flow of blood, and at the time of the trial had not sufficiently regained his strength to resume his occupation of farming. It is not the purpose of this opinion to pass on whether the defendant was in very truth reckless, grossly negligent, or negligent at all. Those were questions for the jury. All that this court can say with propriety is that the record disclosed evidence from which the jury might consider and find against the defendant on that issue.

It was urged that the trial court erred by allowing the question of punitive damages to be considered by the jury. Of course, such damages would be allowed in a case in which the evidence was sufficient to show a malicious desire on the part of the defendant to inflicit injury on the plaintiff, as in cases of aggravated assault or battery and the like. The authorities, however, are numerous that punitive damages will also be awarded where the conduct of the defendant is reckless, as if he knew the danger impending to the plaintiff, but proceeded with manifest indifference to the result. Likewise, such damages are awarded where the defendant is grossly negligent. It was for the trial court to determine whether there was evidence to go to the jury on the subject. It was for the jury to determine the fact from the evidence, and it was the exclusive province of the jury to assess punitive damages if there was any actual damage to which the exemplary damages might be added.

General Practitioner May Testify to Mental Capacity

(Baldridge v. Zigler (Okla.), 229 Pac. R. 831)

The Supreme Court of Oklahoma, in affirming a judgment sustaining the validity of a deed conveying land, which was executed six days after the grantor was stricken with paralysis and six days before his death, says that a physician was asked whether, during his visits to, talk with, and examination of, the grantor, the latter was of rational and sound mind. The question was objected to on the ground that the witness had not shown himself qualified. The objection was sustained by the trial court. But the supreme court holds that it was error to sustain the objection on the ground stated, because the evidence showed that the witness was a licensed practicing physician, and had been for a number of years. While the witness did not qualify as an expert on mental and nervous diseases, the supreme court thinks his qualification as a general practitioner would be sufficient to authorize him to express an opinion. However, the supreme court does not regard the error of sufficient consequence in this case to constitute reversible error, for the reason that the testimony sought to be obtained by the question was merely cumulative, as several experts and other attending physicians were placed on the stand and gave testimony on this point, and furthermore the witness was permitted to testify as to the condition of the patient, at the time of the witness's visits, and there are many authorities which hold that evidence of the character objected to is not competent.

Intervening Malpractice in Injury Case—Payments

(Dewhirst v. Leopold et al. (Calif.), 229 Pac. R. 30)

The Supreme Court of California, in affirming a judgment for $2,100 damages in favor of the plaintiff, says that his left arm was fractured by being struck by an automobile operated by the defendant. The arm became infected, and a necrotic condition developed, requiring the removal of a portion of the bone. Other operations of minor importance were performed. The question whether or not the infection and necrosis resulted from carelessness or negligence of the plaintiff in selecting a physician and surgeon was submitted to the jury on full and fair instructions, and this court cannot disturb the implied findings, as there was ample evidence to support them. The record contained no substantial testimony from which it could be inferred that the infection and necrotic condition were attributable to inattention or malpractice on the part of the attending physician and surgeon. No physician or person skilled in medicine or surgery so testified.

The trial court instructed the jury that the defendant was not liable in damages for any injury resulting from the intervening malpractice or error of the surgeon or surgeons, if such malpractice or error was found by the jury to have existed, if the jury found that the plaintiff failed to exercise reasonable care and diligence in the selection of a surgeon or surgeons of ordinary competence and skill. It was the duty of the plaintiff to exercise reasonable care and diligence in securing the services of a surgeon or surgeons of ordinary skill and competence to treat his injuries. Such skill and competence were to be measured by that care and skill which were exercised generally by surgeons of ordinary care and skill in that community and in communities similar to it. The foregoing instructions correctly stated the law. There was nothing in the record to indicate that the plaintiff was at all negligent in the selection of a physician and surgeon.

Complaint was made that no evidence was offered by the plaintiff to show that the amounts paid on account of medical treatment and attention were reasonable for the services performed. However, the amounts paid were some evidence of reasonable value, and there being no showing to the contrary, such evidence must be held to be sufficient.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, Atlantic City, N. J., May 25-29. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

American Association for the Study of Allergy, Atlantic City, May 26. Dr. W. W. Duke, Federal Reserve Bank Bldg., Kansas City, Mo., Sec'y.

American Association for the Study of Goiter, Atlantic City, May 26. Dr. J. D. Moschelle, Odd Fellows Bldg., Indianapolis, Ind., Secretary.

American Gastro-Enterological Association, Atlantic City, May 25-26. Dr. John Bryant, 338 Marlborough Street, Boston, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, May 22-25. Dr. R. L. Loughran, 145 West 58th Street, New York, Secretary.

American Proctologic Society, Atlantic City, May 25-26. Dr. J. F. Montague, 540 Park Avenue, New York, Secretary.

American Society of Clinical Pathologists, Philadelphia, May 20-23. Dr. Ward Burdick, Metropolitan Building, Denver, Secretary.

American Therapeutic Society, Atlantic City, N. J., May 21-22. Dr. L. H. Taylor, The Cecil, Washington, D. C., Secretary.

American Urological Association, St. Louis, May 21-23. Dr. H. G. Hamer, Hume-Mansur Building, Indianapolis, Secretary.

Association for the Study of Internal Secretions, Atlantic City, May 26. Dr. F. M. Pottenger, Title Insurance Bldg., Los Angeles, Secretary.

California Medical Association, Yosemite National Park, May 18-21. Dr. Emma W. Pope, Balboa Building, San Francisco, Secretary.

Conference of State and Provincial Health Authorities, Montreal, Canada, June 4-5. Dr. Richard M. Olin, State Commissioner of Health, Lansing, Mich., Secretary.

Connecticut State Medical Society, Bridgeport, May 20-21. Dr. Charles W. Comfort, Jr., 27 Elm Street, New Haven, Secretary.

Illinois State Medical Society, Quincy, May 19-21. Dr. Harold M. Camp, Lahl Building, Monmouth, Secretary.

Maine Medical Association, Bar Harbor, June 23-25. Dr. B. L. Bryant, 265 Hammond Street, Bangor, Secretary.

Massachusetts Medical Society, Boston, June 9-10. Dr. W. L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, Atlantic City, May 25-26. Miss H. Wilson, 535 N. Dearborn Street, Chicago, Secretary.

Medical Women's National Association, Atlantic City, May 25-26. Dr. B. M. Haines, Michigan Department of Health, Lansing, Secretary.

Montana, Medical Association of, Lewistown, July 8-9. Dr. E. G. Balsam, 222 Hart-Albin Building, Billings, Secretary.

New Hampshire Medical Society, Manchester, May 19-20. Dr. D. E. Sullivan, 7 North State Street, Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, June 18-20. Dr. J. B. Morrison, 97 Halsey Street, Newark, Secretary.

North Dakota State Medical Association, Fargo, May 18-19. Dr. Alex. J. McCannel, Minot, Secretary.

North Pacific Pediatric Association, Portland, June 29. Dr. E. J. Barnet, Paulsen Building, Spokane, Wash., Secretary.

Pacific Northwest Medical Association, Portland, Ore. June 29-July 1. Dr. Frederick Epplen, Paulsen Building, Spokane, Wash., Secretary.

Radiological Society of North America, Atlantic City, N. J., May 22-23. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.

Rhode Island Medical Society, Providence, June 4. Dr. J. W. Leech, 369 Broad Street, Providence, Secretary.

Southern Minnesota Medical Association, Owatonna, May 18. Dr. H. T. McGuigan, Red Wing, Secretary.

West Virginia State Medical Association, Bluefield, June 9-11. Mr. Sterritt O. Neale, 211 Smallridge Bldg., Charleston, Executive Sec'y.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).
Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

35: 1-152 (March 15) 1925

Functional Compensatory Hypertrophy of Opossum Ovary. C. G. Hartman, Austin, Texas.—p. 1.
Nonnucleated Cytoplasmic Elements of Blood. III. Leukoplastids or Nonnucleated Leukocytic Derivatives in Vertebrates Other Than Mammals. V. E. Emmel, Chicago.—p. 31.
Types of Man in Yellow-Brown Race. R. B. Bean, Charlottesville, Va. —p. 63.
Degenerative Changes in Unfertilized Uterine Eggs of Opossum (Didelphis Virginiana), with Remarks on So-Called Parthenogenesis in Mammals. S. C. Smith, Austin, Texas.—p. 81.
Study of Blood of Leopard Frog, by Supravital Staining and Injection of India Ink Into Dorsal Lymph Sac. H. E. Jordan, Charlottesville, Va.—p. 105.
Thyroid Apparatus. XXIII. Growth of Glands of Internal Secretion After Thyroparathyroidectomy and Parathyroidectomy. F. S. Hammett, Philadelphia.—p. 133.

American Journal of Obstetrics and Gynecology, St. Louis

9: 295-441 (March) 1925

*Correlation of Uterine and Tubal Changes in Tubal Gestation. E. Novak and H. L. Darner, Baltimore.—p. 295.
Conservative Treatment of Eclampsia. E. Speidel, Louisville.—p. 320.
Treatment of Eclampsia by Stroganoff Method. H. J. Stander, Baltimore.—p. 327.
Treatment of Eclampsia. E. L. King, New Orleans.—p. 338.
Modified Scanzoni Maneuver in Treatment of Vertex-Occipito-Posterior Positions. A. H. Bill, Cleveland.—p. 342.
Two Cases of Bicornate Uterus with Pregnancy: Cesarean Section. A. T. Jones, Providence, R. I.—p. 347.
Case of Large Mucocele of Cervix, Following Supravaginal Hysterectomy Fourteen Years Previously. F. A. Cleland, Toronto.—p. 349.
Relation of Extraneous Disease and Subsequent Organic Defects to Incidence of Eclampsia. J. S. Lawrance, Philadelphia.—p. 351.
Anteposed Uterus. F. Reder, St. Louis.—p. 356.
Eclampsia in Patient with Duplex Uterus and Single Kidney. S. A. Cosgrove and E. G. Waters, Jersey City, N. J.—p. 360.
*Foreign Proteins as Adjuvants in Treatment of Obstinate Pelvic Infections. R. W. Mohler, Philadelphia.—p. 365.
Uterus Septus; Operative Technic. W. Kerwin, St. Louis.—p. 369.
Torsion of Ovarian Carcinoma. L. S. Schwartz, Brooklyn.—p. 375.
Roentgen Ray in Prenatal Diagnosis of Fetal Monstrosity. E. B. Andersen, Grand Rapids, Mich.—p. 382.

Uterine and Tubal Changes in Tubal Gestation.—This paper by Novak and Darner is based on the study of twenty-one cases of tubal pregnancy in which, in addition to the tubal gestation sac, the uterine mucosa was available for study, thus affording an opportunity of correlating the uterine and tubal changes in this connection. In fifteen cases the uterine mucosa was available because a hysterectomy had been done, in three because a preliminary curettage had been performed, and in three because a more or less perfect uterine cast had been expelled by the patient. The decidual reaction occurring in the uterus with extra-uterine pregnancy is found to be identical with that of normal gestation so long as the embryo is alive. With the death of the latter, however, the superficial compact portion, with at times a considerable part of the spongy glandular layer, is cast off. Its expulsion from the vagina, however, may not take place for a considerable period, perhaps many days, after its separation from the deeper layers. The mechanism of the separation is strongly suggestive of that observed in connection with the throwing off of the corresponding portions of the endometrium in the nonpregnant woman at the time of menstruation. The same statement applies to the process of regeneration. In view of the degeneration and autolytic changes involving the sequestrated decidua, it is not infrequently thrown off in smaller particles rather than as a large cast of the uterine cavity. The authors have found no evidence, in their own series, that the decidua merely involutes or shrinks, without loss of tissue, as has been claimed by some.

Treatment of Pelvic Infection with Foreign Proteins.—Ten patients have been treated by Mohler with milk injections, and the results seem to have warranted the treatment. There were five cases with salpingitis without any general pelvic infection, all complaining of pain and tenderness in the affected area, two patients with pelvic peritonitis which had produced large pelvic masses with severe pain and tenderness in this region, one case of bilateral salpingitis complicated with pulmonary tuberculosis, one case with a cystic ovary following a salpingectomy on the affected side, another patient with a myomatous uterus with a pelvic mass of inflammatory origin which extended to the umbilicus. All these patients were given five or six injections of milk at weekly intervals. In all the patients there was a very marked improvement in the general condition, the pain became less; they gained in weight; the appetite improved, and the secondary anemia abated.

American Journal of Public Health, Albany, N.Y.

15: 189-288 (March) 1925

Values in Control of Environment. A. Wolman, Baltimore.—p. 189.
Standardization of Wassermann Test. R. Gilbert and V. Langworthy, Albany.—p. 201.
Promotion of Industrial Health. C. D. Selby, Toledo, Ohio.—p. 209.
Tetra-Ethyl Lead and Public Health. J. H. Shrader, Baltimore.—p. 213.
Vital Statistics for Educational Uses. D. B. Armstrong, Baltimore.—p. 217.
Use of Oil for Destroying Mosquito Larvae. H. W. Green, Cleveland. —p. 219.
Safety for More and Better Adventures. A. W. Whitney, Chicago.—p. 223.
Influence of Cooking and Canning on Vitamin Content. W. H. Eddy, New York.—p. 227.
Public Health Administration Without Medical Inspectors. F. E. Harrington, Minneapolis.—p. 232.
Nutritional Value of Milk. G. T. Palmer, Springfield, Ill.—p. 237.

American Review of Tuberculosis, Baltimore

11: 1-84 (March) 1925

Normal and Pathologic Histology of Lung. W. S. Miller, Madison, Wis. —p. 1.
Results with Extrapleural Thoracoplasty for Pulmonary Tuberculosis. W. H. Thearle, Denver.—p. 19.
*Localized Rest in Treatment of Pulmonary Tuberculosis; Extrapleural Thoracoplasty. E. S. Mariette, Minneapolis.—p. 27.
Postpneumonic Chronic Pulmonary Disease in Children. W. E. Carroll, C. B. Gibson and A. Banyai.—p. 40.
*Physical Sign Observed in Fibroid Phthisis, Fibroid Pleurisy and Interstitial Pneumonia. R. D. Lillie, Stapleton, N. Y.—p. 47.
Vital Capacity in Pulmonary Tuberculosis. B. P. Stivelman and R. A. Bendove, Bedford Hills, N. Y.—p. 53.
*Respiratory Organs in Health and Disease. J. A. Myers, Minneapolis. —p. 64.
*Clinical Findings and Ring Test in 500 Cases of Tuberculosis. J. A. Myers, Minneapolis.—p. 71.
*Agglutination Reactions of Paratyphoid-Dysentery Group in Tuberculosis. T. G. Hull, K. Henkens and H. Cassidy, Springfield, Ill.—p. 78.

Localized Rest in Tuberculosis.—Localized rest in addition to general rest, Mariette asserts, is necessary for some patients. This can be obtained partially by medical measures and more completely by surgical measures. Of the latter, thoracoplasty is the most radical and, therefore, should be reserved for those cases in which the less radical measures, including pneumothorax, have been tried and have failed. The two-stage is more desirable than a one-stage operation, and the ideal interval between the operations is not over three weeks.

Physical Sign in Fibroid Phthisis.—A paravertebral resonant triangle at the base on the dull side has been found by Lillie in certain cases giving other physical signs and roentgen-ray evidence of unilateral pleural or pulmonary fibrosis. This sign is believed to be of aid in differentiating the dulness due to these conditions from that due to effusions and consolidations (as in pneumonia). No cases of lobar pneumonia were examined with this point in view, and such patients are usually too sick to permit of very detailed examination.

Respiratory Organs in Health and Disease.—Cases are cited by Myers to show that the vital capacity test is of tremendous value both in diagnosis and the guidance of treatment when serial readings are made, and particularly when at least one of these readings was taken at a time when the patient was in good health. The vital capacity test is recommended strongly as a routine procedure in every physical condition.

Ring Test in Tuberculosis.—Among 500 cases examined by Myers for tuberculosis the ring test was negative in 304 and positive in 196. Of the 304 negative ring test cases, the clinical findings, as far as active tuberculosis is concerned, were in complete agreement with the test in 276. Six of the remaining patients had far-advanced disease and were apparently near death. Fourteen other cases with positive ring tests in the presence of acute bronchitis became negative after the bronchitis disappeared. Five other patients with tubercle bacilli in the sputum had good working capacity and were free from symptoms. In only six cases was there no explanation to offer for the apparent discrepancy. One of these was a case with a tuberculous kidney, confirmed by pathologic examination after nephrectomy. The remaining five cases had moderately advanced disease with slight or no symptoms. Of the 196 positive ring test cases, the clinical findings were in complete agreement with the test in 154. In thirty of the remaining cases, not enough evidence could be gathered to make a definite diagnosis of active tuberculosis, yet in nearly all of these cases there was enough evidence to arouse suspicion and warrant further observation and study. In the remaining twelve cases, the clinical examination was entirely negative.

Agglutination Reactions of Paratyphoid Dysentery Group in Tuberculosis.—Certain members of the parathyroid dysentery group of intestinal micro-organisms were found by Hull, Henkes and Cassiday to agglutinate readily with blood serum and urine from persons and milk whey from cows. From studies made on patients in a tuberculosis sanatorium, it is not apparent that the stage of tuberculosis has any effect on the agglutination test. Urine from twenty-three tuberculosis patients agglutinated the Flexner dysentery bacillus in only two instances in which intestinal tuberculosis was present. Whey from both mixed market milk and from non-tuberculous cows agglutinated the Flexner dysentery bacillus in many instances. From the results of absorption tests it is probable that the agglutination reactions obtained in this study are due to no specific infection, but are common to the paratyphoid-dysentery group of micro-organisms.

Annals of Clinical Medicine, Baltimore

3: 565-621 (March) 1925

Medical Research. F. G. Banting, Toronto, Canada.—p. 565.
Origin and Development of Ethics in Medicine and Influence of Ethical Formulae on Medical Practice. F. Smithies, Chicago.—p. 575.
*Lead Meningo-Encephalopathy. C. V. Weller, Ann Arbor, Mich.—p. 604.

Lead Meningo-Encephalopathy.—Weller directs attention to the etiologic rôle of lead in a form of meningo-encephalopathy which exhibits a large variety of clinical signs and symptoms. The convulsive type particularly, occurring in adults but also frequently found in children, quite apart from the usually recognized lead hazards, is thought to be of great clinical importance.

Annals of Medical History, New York

7: 1-102 (March) 1925

Early Anatomic Fugitive Sheets. L. Crummer, Omaha.—p. 1.
James Mease. W. S. Miller, Madison, Wis.—p. 6.
Doctor Smollett. C. K. Drinker, Boston.—p. 31.
Master Dermatologists. Based on Diseases Named After Them. H. Goodman, New York.—p. 47.
Su-Wen, Basis of Chinese Medicine. P. M. Dawson, Madison, Wis.—p. 59.
William Cadogan and His Essay on Gout. J. Ruhräh, Baltimore.—p. 64.

Archives of Internal Medicine, Chicago

35: 289-404 (March 15) 1925

*All Day Blood Sugar Curves in Nondiabetic Individuals and in Diabetic Patients With and Without Insulin. L. Jonas, T. G. Miller and I. Teller, Philadelphia.—p. 289.
*Pancreatic and Hepatic Activity in Diabetes Mellitus. C. M. Jones, W. B. Castle, H. B. Mulholland and F. Bailey, Boston.—p. 315.
Respiratory Organs in Health and in Disease. XVI. Comparison of Vital Capacity Standards. W. P. Shepard and J. A. Myers, Minneapolis.—p. 337.
Permeability of Human Blood Cells to Carbon Dioxid and Ammonium Hydroxid in Solutions of Same. pH. H. E. Pearse, Boston.—p. 347.
*Influence of Food Intake on Enzymatic Concentration of Human Intestinal Contents Obtained from Duodenal Fistula. D. N. Silverman and W. Denis, New Orleans.—p. 357.
*Electrocardiogram as Aid in Diagnosis of Adhesive Pericardial Mediastinitis. F. R. Dieuaide, Baltimore.—p. 362.
Respiratory Gas Percentages During Nitrous Oxid Anesthesia in Dogs. C. W. Greene and H. M. Currey, Columbia, Mo.—p. 371.
Distribution of Nitrous Oxid and Oxygen in Blood of Dogs During Gas Anesthesia. C. W. Greene, H. M. Currey, F. E. Dexheimer, E. B. Hanan and D. L. Harlan, Columbia, Mo.—p. 379.
*Blood Phosphorus in Chronic Myelogenous Leukemia as Influenced by Roentgen-Ray Therapy. T. E. Buckman, G. A. Deland and Margaret Weld, Boston.—p. 289.
*Prognosis of Chronic Infectious Endocarditis. A. D. Biggs, Chicago.—p. 402.

Normal and Diabetic Blood Sugar Curves.—Thirty-four blood sugar concentration curves were made by Jonas, Miller and Teller on twenty-nine patients, six nondiabetic and twenty-three diabetic, and covered periods up to twenty-four hours. This was done in an effort to work out a more satisfactory routine method of regulating the dosage and the time of administration of insulin to diabetic patients. The ideal method was not arrived at, but the following general rules for the management of such cases seem warranted: (*a*) With a maintenance diet equally distributed among the three meals of the day, mild cases of diabetes may be kept within the normal limits of glycemia by means of a single dose of insulin administered one half hour before breakfast. (*b*) More severe cases require, in addition to an adequate morning dose, a second but somewhat smaller one half an hour before the evening meal. (*c*) When the morning fasting level of blood sugar cannot be kept below the threshold value for glycosuria by these two doses, a third one is indicated at about midnight. (*d*) The amount of insulin to be administered at each time must be determined by blood sugar estimations made before and after meals. When insulin is not being given, and the diet factors are the same for each of the three regular meals, the highest blood sugar concentration occurs usually about one hour after breakfast, and the lowest is before breakfast. When insulin is used, as suggested, the highest point may be attained before the first insulin administration of the day or an hour after breakfast, while the lowest point is usually reached just before the midday meal or in the midafternoon.

Pancreatic and Hepatic Activity in Diabetes.—An unselected group of sixty-eight diabetic patients has been examined by Jones et al. for evidence of alteration in pancreatic or hepatic activity. Pancreatic enzyme activity was diminished in nearly half of the cases. Bile pigment elimination in the duodenal contents was abnormally high in about three fourths of the cases. In nearly one third of the cases, there were associated enzyme and pigment abnormalities. The greatest alterations in enzyme activity were noted in the lipolytic and proteolytic ferments. These findings are taken to indicate that in diabetes mellitus there is a marked alteration in the external secretory activity of the pancreas and in the hepatic function. Cases of diabetes complicated by pancreatic disease were found to be associated with an increased frequency of pancreatic enzyme disturbance. Sepsis, gangrene and pancreatitis seemed to be predominating factors in producing an alteration in bile pigment metabolism. All three cases of hemochromatosis showed a reduction in enzyme activity, but no abnormality in pigment elimination. Acidosis produces a marked disturbance of pancreatic enzyme activity and liver function. Cholelithiasis, as diagnosed by examination of the duodenal sediment, occurred in 19 per cent. of the cases in this series. In addition, several other patients had histories or operative findings consistent with the diagnosis of gallstones. The authors suggest that the average age of this group of cases, constituting 22 per cent. of the entire series, was about 51. They believe that the existing figures for the incidence of gallstones in diabetes is far too low. It is possible that at least one fifth of all diabetic patients over 40 have an associated cholelithiasis.

Effect of Foodstuffs on Pancreatic Secretion.—The influence on the pancreatic secretion of different foodstuffs taken by mouth has been demonstrated experimentally by Silverman and Denis. The effect of ingesting a mixture of protein, fat and carbohydrate, in the form of 400 c.c. of milk, taken in two equal portions one-half hour apart, is a stimulation of the protease and lipase. The ingestion of fat in the form of cream, in two portions of 200 c.c. each, one-half hour apart, brought about a very distinct stimulation of the

amylase and the protease within twenty-six minutes after taking the first portion. The ingestion of protein and a very small amount of fat, in the form of eight egg whites and one yolk boiled two minutes, was productive of the most striking results observed. All three of the pancreatic enzymes assumed the maximum concentrations noted in any of the experiments made on this subject. In one hour and seventeen minutes after the eggs were taken, both the amylase and the protease had almost doubled their concentrations, whereas the lipolytic activity rose from 0 to 1.5 c.c. The ingestion of the starch in the form of arrowroot biscuits, which proved very appetizing to the patient, did not, in spite of the psychologic effect, show any stimulation on the production of amylase and but little more on the protease.

Electrocardiogram in Pericardial Mediastinitis.—A small series of patients is reported by Dieuaide who showed no significant change in their electrocardiographic record with a shift in position. All of these who came to necropsy were found to have important lesions involving both the pericardium and the mediastinum. Of a larger series of patients with clinical signs of "adherent pericardium," whose records showed a marked change, none were found to have lesions both of the pericardium and of the mediastinum. It is suggested that fixation of the electrical axis, determined by this means, may serve as objective evidence of this lesion.

Blood Phosphorus in Chronic Myelogenous Leukemia.—A study of the blood phosphorus was made by Buckman, Deland and Weld in nineteen cases of chronic myelogenous leukemia and in five cases of cancer before, during and following roentgen-ray therapy. They found that in nonirradiated or not recently irradiated cases of chronic myelogenous leukemia, the total phosphorus content of the whole blood is markedly elevated. This increase is due almost entirely to the increased total phosphorus content of the corpuscles. The mean value for the total phosphorus content of the plasma, in spite of wide individual variations, was found to be within normal limits. Changes in the blood phosphorus occur as a result of roentgen-ray therapy given to a patient with leukemia or cancer. As a result of tissue destruction incident to such treatment, a transient, but often, in leukemia, a marked increase of the total phosphorus content of both plasma and cells generally occurs, the latter apparently serving as a temporary reservoir for the excess of phosphorus, which for the moment cannot be taken care of by the plasma. No significant variations were noted in the inorganic phosphorus contents of plasma or corpuscles before, during, or after, roentgen-ray therapy in leukemia or cancer.

Prognosis of Chronic Infectious Endocarditis.—The presence of bacteria in blood cultures of patients with endocarditis is generally regarded as indicating a grave prognosis. This idea is not altogether in harmony with results obtained at St. Luke's Hospital, Chicago. Of fifty-seven patients with bacterial endocarditis reported on by Biggs, twenty-four are living and many of them seem to have recovered from the heart valve infection. The other thirty-three are dead.

Archives of Neurology and Psychiatry, Chicago

13: 289-422 (March) 1925

Muscular Coordination Experimentally Studied in Relation to Cerebellum. F. Tilney and F. H. Pike, New York.—p. 289.
*Blood Sugar Studies in Experimental Pituitary and Hypothalamic Lesions. E. Sachs, St. Louis, and M. E. Macdonald, Boston.—p. 335.
*Histopathologic Changes in Spinal Contusion. G. B. Hassin, Chicago.—p. 369.
*Subtotal Resection of Sensory Root for Relief of Major Trigeminal Neuralgia. C. H. Frazier, Philadelphia.—p. 378.
Significance of Brain Weight. H. H. Donaldson, Philadelphia.—p. 385.
Effect of Removal of Adenoids and Tonsils on Mental Development of Child. E. B. Angell, Rochester, N. Y.—p. 388.

Blood Sugar Studies in Lesions of Hypophysis.—Sachs and Macdonald carried out an experimental study of blood sugar values in the dog following removal of the hypophysis, in lesions of the hypophysis and lesions of the hypothalamic region. Protocols of thirty-five animals operated on are reported. These experiments confirm the work of others that polyuria is apparently due to hypothalamic injury. The blood sugar average in fasting animals is slightly lower after pituitary or hypothalamic operation, but this may be within normal limits of variation. Transient glycosuria for from one to two days occurred after hypothalamic puncture in a few cases, and during this time the blood sugar was higher than normal. Because of the transience of this symptom, the authors do not consider it as being of great importance. The height of the blood sugar curve following operation, in all cases except those of anterior lobe removal, was reached at the end of one hour, in contrast to the curve in normal animals in which the height occurs at the end of one-half hour.

Tissue Changes in Spinal Contusion.—The pathologic findings in the case reported by Hassin were: Laceration of the dura at the point of entrance of the bullet; traumatic softening of the middorsal spinal cord segment with excavation of the adjacent lower thoracic segments; diffuse spinal meningitis, partly suppurative; microscopic foci of cytoplasmic glia tissue in the anterior gray horns and in the posterior commissure; systemic and diffuse degeneration of the white substances with absence of inflammatory cord changes.

Subtotal Root Resection for Trigeminal Neuralgia.—In none of twenty-five cases in which Frazier did a subtotal section of the sensory root has there been a recurrence of the neuralgia after ten years. As to keratitis, two of the twenty-five patients developed trivial lesions while still in the hospital, both of which, however, yielded promptly to properly instituted treatment. But not one of these patients developed corneal complications after discharge from the hospital.

Archives of Ophthalmology, New Rochelle, N. Y.

54: 111-216 (March) 1925

Vascular Lesions of Retina in Young Persons. H. Friedenwald, Baltimore.—p. 111.
Significance of Papilledema to Neurologic Surgeon. G. Horrax, Boston.—p. 130.
Papilledema in Otolaryngology. L. E. White, Boston.—p. 142.
Significance of Papilledema to Ophthalmologist. J. Bordley, Jr., Baltimore.—p. 158.
Abrupt Monocular Blindness, Resulting in Complete Optic Atrophy, During Encephalitis with Double Papillitis. Roentgenogram of Optic Canals. C. B. Walker, Springfield, Mass.—p. 165.
Serum and Lens Antigen Extract Treatment for Prevention and Cure of Cataract. A. E. Davis, New York.—p. 172.
Angiomatosis of Retina. H. W. Scarlett, Philadelphia.—p. 183.
Pronounced Traumatic Dislocation of Eyeball Without Demonstrable Fracture of Orbit or Rupture of Sclera: Case. S. P. Oast, New York.—p. 191.

Arkansas Medical Society Journal, Little Rock

21: 193-209 (March) 1925

Things That Reduce Operative Mortality, Morbidity and Disability. J. P. Runyan, Little Rock.—p. 193.
Year's Experience with High Voltage Roentgen-Ray Therapy. D. A. Rhinehart, Little Rock.—p. 197.
New Method of Removing Foreign Bodies from Nose. C. H. Cargile, Bentonville.—p. 200.

California and Western Medicine, San Francisco

23: 289-384 (March) 1925

*Function of Spleen. H. A. Hall and E. Ablahadian, Glendale.—p. 289.
Case of Bilateral Fusion of Supernumerary Kidney. W. E. Stevens, San Francisco.—p. 294.
Esophageal Diverticula. E. C. Moore, Los Angeles.—p. 299.
Roentgen-Ray Therapy of Uterine Myoma During Pregnancy. J. D. Lawson, Woodland.—p. 301.
Diphtheria Immunization. A. Metzner, Los Angeles.—p. 306.
Surgical Amebiasis. P. K. Gilman, San Francisco.—p. 309.
*Symptom Complex in Diabetes That May Be Confused with Reaction of Insulin Overdosage. B. Smith, Los Angeles.—p. 311.
Ringworm of Scalp. H. E. Miller, San Francisco.—p. 313.
Surgical Treatment of Obstructing Prostate. F. F. Hatch, Salt Lake City.—p. 316.
Coexisting Large Fibroid and Pregnancy, Cesarean Section and Hysterectomy at Term. C. A. DeLancey, San Anselmo.—p. 320.
Treatment of Fracture of Neck of Femur. E. H. Smith, San Francisco.—p. 321.

Function of Spleen.—The spleen may have something to do with hemolysis; it may have something to do with the elaboration of uric acid; it possibly is an important lymphatic gland, but, above all these functions, Hall and Ablahadian place its action as a calcium metabolism stimulant, preparing suitable calcium salts for presentation to the blood stream and the impoverished body cells.

Confusing Symptom Complex in Diabetes.—The symptoms described by Smith are: Muscle weakness; chilliness with a cold perspiration; the entire face shows an ashy pallor; the pupils are dilated; the pulse is rapid and soft; and the hands and feet are cold. When the symptoms are more pronounced the patient may appear to be in severe shock or collapse. The pallor is more marked than in the early symptoms of the insulin reaction, and the cold sweating is more profuse than the slight moisture that precedes the insulin tremor, but is not so general or so extreme as the later sweating associated with the insulin convulsion. Dizziness is a common symptom and may be so severe that the patient is unable to continue at work. There may be various parasthesias, and disturbance of coordination, together with a dimness of vision. Faintness may be a disturbing symptom, although an actual loss of consciousness has never been reported by the patients. Arterial hypotension has been a constant finding, even when the symptoms have been mild. More recently a gradual lowering of the blood pressure has been found in patients before definite symptoms developed.

Illinois Medical Journal, Oak Park

47: 161-240 (March) 1925

Advances in Surgery Through Physicochemic Studies in Blood. W. J. Mayo, Rochester, Minn.—p. 185.
Standardization of Equipment for Treatment of Fractures. W. R. Rainey, St. Louis.—p. 188.
Popular Instruction in Diphtheria. C. F. Glueck, Boston.—p. 194.
Plea for Compulsory Schick Testing and Immunization Against Diphtheria. C. A. Earle, Des Plaines.—p. 197.
Pathology and Bacteriology of Putrid and Gangrenous Processes. D. J. Davis, Chicago.—p. 200.
Sanitation of Common Carriers. S. C. Beach, Chicago.—p. 204.
Dilute Alcohol Nerve Blocking Anesthesia in Tonsillectomy. R. Sonnenschein, Chicago.—p. 208.
Importance of Early Treatment of Epithelioma About Orbit. M. F. Engman and J. S. Kimbrough, St. Louis.—p. 212.
Surgical Treatment of Angina Pectoris. F. Christopher, Winnetka.—p. 218.
*Eyelashes Sign. B. Lemchen, Chicago.—p. 222.
Surgery of Lower Urinary Tract. V. C. Hunt, Rochester, Minn.—p. 222.
*Treatment of Diabetes from Viewpoint of General Practitioner. R. W. Keeton, Chicago.—p. 227.
Treatment of Atrophic Rhinitis. J. A. Clark, Chicago.—p. 233.

Eyelashes Sign.—Lemchen describes a new sign. In comatose patients, on touching the eyelashes in functional diseases like hysteria, catatonia and epilepsy there is a winking-like movement of the eyelids—while in organic brain diseases like cerebral hemorrhage, severe trauma, unconsciousness following convulsions in paresis, and in one skull fracture, no such winking takes place.

Treatment of Diabetes.—Keeton describes a "first aid" plan for the treatment of the acidosis of diabetes. As soon as the diagnosis is made the patient is given 60 units of insulin subcutaneously. This insulin will act over a period of eight hours. A hypoglycemic reaction will not result if during this time he is given also from 60 to 100 gm. of glucose. A small glass of whole milk or a small glass of unsweetened orange juice each contain 15 gm. of glucose. Hence, then, he may be given from four to six glasses of such food at one and a half to two hour intervals. If the urine be examined by a quantitative test for sugar at the end of each two hours, then the dose of food to be given can be regulated more easily. At the end of eight hours a second dose of 40 units of insulin is to be given. He can then be protected in the same way with food over the next eight hours. During these sixteen hours the patient should also be given 30 gm. of sodium bicarbonate. This usually brings the patient to the morning of the second day. By this time the acidosis is under control and the problem is now one of establishing him on a diet with interval feeding.

Iowa State Medical Society Journal, Des Moines

15: 105-164 (March 10) 1925

Advances in Surgery Through Physicochemic Studies of Blood. W. J. Mayo, Rochester, Minn.—p. 105.
Local Anesthesia in Acute Abdominal Emergencies. R. E. Farr, Minneapolis.—p. 108.
Functional Eye Strain. F. C. La Grange, Cedar Rapids.—p. 112.
Smallpox. J. A. C. Bushby, Iowa City.—p. 116.
Memory Defect of Korsakoff Type in Multiple Neuritis Following Toxemia of Pregnancy. F. A. Ely, Des Moines.—p. 119.
*Treatment of Infections by Means of Blood Transfusion. R. R. Hansen, Marshalltown.—p. 124.
Abdominal Emergencies. J. F. Studebaker, Ft. Dodge.—p. 129.
Indications for Mastoid Operation in Acute Otitis Media. E. Cobb, Marshalltown.—p. 133.
Acute Endocarditis. E. W. Meis, Sioux City.—p. 136.
Diphtheria. A. A. Pace, Toledo.—p. 142.

Treatment of Infections by Blood Transfusion.—Hansen cites two cases of sepsis in which blood transfusions were made and saved the patients' lives. One was a case of septic arthritis of the left hip following a mastoid operation. With temperature of 106 F., rapid running pulse, delirium and other symptoms of profound toxemia, the patient received his first blood transfusion. Following a period of quiescence of about ten days he again developed a septic temperature, and a second transfusion was followed by return to normal temperature and general improvement. The man made an uneventful recovery, his body resistance being maintained by subsequent transfusions given from time to time as conditions seemed to indicate. The second case was one of infection following a compound comminuted fracture of the right femur. Repeated transfusions enabled this patient to weather what in all probability would have proved an overwhelming toxemia; and by building up his resistance hastened what would otherwise have been an extremely tedious and protracted convalescence.

Journal of Experimental Medicine, Baltimore

91: 315-437 (March) 1925

Bicarbonate Reserve and Dissociation Curve of Oxyhemoglobin in Febrile Conditions. A. C. White, Edinburgh.—p. 315.
*Allergic Irritability. II. Anaphylaxis as Affected by Inheritance. P. A. Lewis and D. Loomis, Princeton, N. J.—p. 327.
*Pure Strain of Thyroid Cells and Its Characteristics. A. H. Ebeling, New York.—p. 337.
*Resistance to Spontaneous Mouse Cancer Induced by Injections of Oleic Acid. W. Nakahara, New York.—p. 347.
*Pathology of Experimental Virus Encephalitis. III. Varieties and Properties of Herpes Virus. S. Flexner and H. L. Amoss, New York.—p. 357.
Relative Reaction Within Living Mammalian Tissues. I. General Features of vital Staining with Litmus. P. Rous, New York.—p. 379.
*Focal Interstitial Nephritis Following Interference with Normal Intake of Colostrum. T. Smith, Princeton, N. J.—p. 413.
Antigens of Red Blood Corpuscles. K. Lansteiner and J. van der Scheer, New York.—p. 427.

Anaphylaxis as Affected by Inheritance.—Lewis and Loomis summarize their findings as follows: Inbred lines of guinea-pigs, which have previously been observed to differ in their susceptibility to tuberculosis, differ in their anaphylactic responses as well. The families that are relatively resistant to tuberculosis appear also to be somewhat more resistant to some one or more of the phases of the anaphylactic reaction complex.

Pure Strain of Thyroid Cells.—A pure strain of thyroid epithelium was isolated by Ebeling and maintained in active condition for seven months. At the end of the experiment, the rate of cell multiplication was as great as at its beginning. The thyroid cells grew at the surface of the coagulum as pavement epithelium, and within the coagulum as a glandular structure. The cells did not dedifferentiate, and the lumen of the acini in cultures from a strain over 4 months old contained colloid secretion similar morphologically to that from a freshly extirpated thyroid.

Oleic Acid Injections Increase Resistance to Cancer.—The experiments reported on by Nakahara show that the resistance of mice to spontaneous neoplastic diseases can be increased by means of oleic acid injections. In the treated mice the reaction about the implanted cancer graft differs from that encountered in untreated animals.

Properties of Herpes Virus.—Mild strains of the virus of herpes are described by Flexner and Amoss the action of which tends to be confined and local. Unless, therefore, these mild strains are injected intracranially they do not tend to produce virus encephalitis in the rabbit. Recovery from infection with the mild strains confers immunity to virulent strains of the herpes and allied viruses. The virus producing encephalitis in the rabbit attaches itself chiefly to and multiplies in the substance of the central nervous

system. Hence, its detection in the cerebrospinal fluid is rarely accomplished. When the inoculation of the virus is made intracranially and especially when the inoculum is composed of active brain tissue, the virus is discoverable in the cerebrospinal fluid by rabbit inoculation much more frequently than when the virus encephalitis follows an extracranial variety of infection. The herpes virus is susceptible of excretion by the kidney of the rabbit and of being detected in the urine by rabbit inoculation.

Interstitial Nephritis Caused by Colostrum.—Smith has observed that an interstitial focal nephritis found in young calves during the first or later months of life, associated with or preceded by the invasion of a special, virulent type of *Bacillus coli*, may be produced by postponing the feeding of colostrum for from twenty-four to thirty-six hours, or by withholding it altogether. In the presence of a virulent type of *B. coli* few calves completely deprived of colostrum survive the first week. Among the survivors, the spotted kidney, the result of *B. coli* bacteremia, is frequently encountered. Calves normally fed have not shown the spotted kidney, and such as have been killed early have had uniformly sterile kidneys.

Journal of Nervous and Mental Diseases, New York

61: 225-335 (March) 1925

Pathologic Alterations of Cortex Caused by Psychoses. O. Marburg, Vienna.—p. 225.
Cardiac Neurosis in Light of Modern Cardiology. L. F. Bishop, New York.—p. 232.
Significance of Psychopathology for General Somatic Pathology. W. A. White, Washington, D. C.—p. 246.

Medical Journal and Record, New York

121: 261-324 (March 4) 1925

Treatment of Fractures. W. A. Lane, London.—p. 261.
Splint Treatment of Fracture of Neck of Femur and Hip Disease. E. H. Bradford, Canton, Mass.—p. 263.
Treatment That Gives Best End-Results in Fractures About Elbow Joint. D. H. Orgel, New York.—p. 265.
Massage in Surgical Cases. W. Van Hook, Chicago.—p. 267.
Case of Pneumonia Simulating Acute Appendicitis and Followed by Bilateral Empyema with Complete Recovery. C. Auer, New York.—p. 269.
Ophthalmology and Stomatology. H. E. Smith, New York.—p. 270.
Syphilis of Anus and Rectum. C. J. Drueck, Chicago.—p. 272.
Vascular Disturbances. L. L. Ten Broeck, Minneapolis.—p. 274.
Three Cases of Mastoiditis. J. Friedman and S. D. Greenfield, Brooklyn, N. Y.—p. 278.
Twenty-Seven Cases of Syphilis Treated by Intravenous Injections of Metallic Mercury. E. A. Gauvin and A. M. Persky, Brooklyn.—p. 282.
Study of Eighty Cases of Acne Treated with Roentgen Rays. L. K. McCafferty and C. L. McCarthy, New York.—p. 285.
Significance of Heredity in Diseases of Skin. N. Tobias, St. Louis.—p. 289.
Case After Operation for Extensive Burn of Left Lids, Eyeball, Upper Face and Temporal Area. J. E. Sheehan, New York.—p. 291.
Clinical Value of Vasomotor Reflexes of Skin. E. A. Tracy, Boston.—p. 292.
Present Status of Some More Common Dermatologic Conditions. S. Feldman, New York.—p. 295.
Psoriasis Diffusa with Extensive Arthritis. A. A. Radcliffe, Waukegan, Ill.—p. 297.
Radiotherapy in Dermatology. O. L. Levin, New York.—p. 299.

Military Surgeon, Washington, D. C.

56: 241-384 (March) 1925

Medical Book of Merit. E. E. Hume.—p. 241.
Psychology, Psychopathology and Psychotherapy in Tuberculosis in Civil and Military Life. S. A. Knopf.—p. 308.
Operations of Service de Santé in Great War. Uzac.—p. 332.
Annual Physical Examination of Army Officers in 1924. G. C. Dunham.—p. 348.
Kahn Precipitation Test. G. W. Rappleyea.—p. 356.
Preparedness and Supplies. M. W. Ireland.—p. 362.

Missouri State Medical Association Journal, St. Louis

22: 79-124 (March) 1925

Ureteral Stone. C. K. Smith, Kansas City, Mo.—p. 79.
Urologic Diagnosis for General Practitioner. B. Lewis, St. Louis.—p. 88.
Eclamptic and Nephritic Toxemias in Late Pregnancy. G. V. Feist, V. Hyslop and P. Z. Alava, St. Louis.—p. 92.
Safety Pins in Food and Air Passages. E. L. Myers, St. Louis.—p. 96.
Lesson from Cults. M. L. Clint, Breckenridge.—p. 99.
Infant Feeding. W. E. Bess, Sedalia.—p. 102.
*Ether Injections in Treatment of Whooping Cough. J. P. Costello, St. Louis.—p. 106.

Ether Injections in Treatment of Whooping Cough.—Of thirty-two cases treated by Costello by the injection of ether method alone, four were cured after two injections, and eighteen were benefited; that is, after the sixth injection the paroxysms were less frequent and the coughing less violent. Ten apparently ran the normal course of the disease, and all of the thirty-two were without complications.

New York State Journal of Medicine, New York

25: 469-510 (March 20) 1925

*Incidence of Infections in Tonsillectomized Children. A. D. Kaiser, Rochester.—p. 469.
*Important Symptom of Perforation with Free Fluid in Abdomen. F. F. McGauley, Schenectady.—p. 472.
Intestinal Toxemia Control Through Biodietetic Methods. C. W. Lieb, New York.—p. 475.
Psychiatry in Relation to Public Schools. A. B. Siewers, Syracuse.—p. 480.
Medical Service Problem. L. E. Sprout, West Leyden.—p. 483.

Incidence of Infection in Tonsillectomized Children.—A large number of children, that had been operated on, selected from all the school children, either because their tonsils and adenoids appeared obstructive and diseased or because the child's history suggested tonsillar infection, were made the subject of study by Kaiser. Twelve hundred of this group were examined three years after operation and the incidence of infection ascertained during this period. The most common infection in the child that had been operated on, elicited at the time of operation, was frequent attacks of sore throat and tonsillitis. Out of the 1,200 operated children, 674, or more than half the group, had been subject to tonsillitis previous to operation. During the last three years since the operation, only 10 per cent. complaining of this symptom failed to get relief from the operation. Frequent head colds were complained of by nearly half of the children in this group previous to operation. During the last three years 146, or 27 per cent., were still subject to frequent head colds. Obviously, head colds are not eliminated when tonsils and adenoids are removed. Enlarged or swollen cervical glands are generally looked on as due to infections originating in the throat, ears, teeth or scalp. The presence of enlarged glands is often the chief indication for the removal of tonsils. It is, indeed, a common infection in children, for in the 1,200 children in this group there was evidence of enlarged cervical glands in 81 per cent. Of this number 68 per cent. were only moderately enlarged, while 15 per cent. were considerably enlarged. A previous reexamination of these children showed that there was no great reduction in the incidence of swollen glands one year after operation, but in the next two years there was a considerable reduction, for at the end of the third year after operation the incidence had been reduced to 4.5 per cent. Since the operation forty-eight children, or 4 per cent., who had never had swollen glands before, developed enlarged cervical glands.

Symptom of Perforation of Intestines.—Among twenty-eight cases of acute perforations seen by McGauley sixteen patients had pain in the shoulder, especially over the outer end of the clavicle. He is of the opinion that pain in the neck or acromioclavicular joint is a symptom that is constant after rupture of an intra-abdominal viscus, provided the fluid that escapes gravitates up to the diaphragm. Fluid in the abdomen after rupture very rapidly flows up to the diaphragm because the patient usually assumes a reclining position. The pain is described by the patient as a "soreness," "rheumatism," terrible burning pain, pressure pain, "seems to choke off breathing," griping pain, etc. The severity of the pain in the shoulder is directly proportionate to the irritating nature of the fluid.

25: 511-554 (March 27) 1925

Diseases and Fate of Twins. I. A. Abt, Chicago.—p. 511.
Foot Strain. S. W. Boorstein, New York.—p. 519.
*Acute Leukemia and Mononucleosis. N. G. Russell, Buffalo.—p. 525.
Serum Therapy of Pneumonia in New York State. A. Wadsworth, Albany.—p. 528.

Acute Leukemia and Mononucleosis.—The first case reported by Russell shows a picture of an infection occurring during the convalescence from a simple tonsillectomy, which never gave a count above 6,000 leukocytes and only twice

showed pathologic cells in even small numbers. The symptoms—fever, anemia, sore throat and hemorrhage—taken as a whole, gave a good picture of leukemia, but the blood count did not confirm this, though fairly frequent counts were made. The pathologist made an unqualified diagnosis of acute myelogenous leukemia. The second case was a clean cut case of acute lymphatic leukemia running its entire course in fifteen days. There was little, if anything, lacking to complete the clinical picture. The blood specimens were classical, showing a great increase in lymphocytes. Many of the pathologic forms were present, but none showed oxidase granules. The postmortem findings, however, showed marked changes in the bone marrow and relatively slight changes in the general lymphatic system. The third case seems to be a fair sample of acute infectious mononucleosis, which appears perfectly simple, though the diagnosis was not made until the course was very apparent.

Ohio State Medical Journal, Columbus

11: 153-232 (March 1) 1925

Diagnosis and Treatment of Chronic Nonsuppurative Arthritis. J. Tucker and J. A. Jackson, Cleveland.—p. 157.
Traumatic Perforations of Abdominal Viscera. C. D. Hauser, Youngstown.—p. 162.
Hyperemesis Gravidarum. C. T. Hemmings, Cleveland.—p. 165.
Neuroses of Ear, Nose and Throat. S. S. Quittner, Cleveland.—p. 170.
Legal Insanity. H. H. Drysdale, Cleveland.—p. 173.

Oklahoma State Medical Association Journal, Muskogee

18: 48-71 (March) 1925

Rôle of Arsphenamin in Treatment of Syphilis. C. B. Taylor, Oklahoma City.—p. 48.
Syphilitic Pyloric Stenosis: Surgical Treatment. G. A. Wall, Tulsa.—p. 49.
Syphilis in New-Born. E. L. Yeakel, Shawnee.—p. 53.
Postoperative Parotitis. L. S. Willour, McAlester.—p. 55.
Sarcoma of Chorioid: Case. A. W. Roth, Tulsa.—p. 57.

Public Health Journal, Toronto

16: 101-142 (March) 1925

Conference on Medical Services in Canada. A. Primrose.—p. 101.
Health Surveys, Health Nurses and Relation of Medical Profession. J. A. Amyot.—p. 118.
Medical Licensure. J. M. MacCallum.—p. 122.
Teeth in Olden Times. W. R. Riddell.—p. 128.
Sanitary Inspectors' Association of Canada. L. L. Anthes.—p. 135.

Southwestern Medicine, Phoenix, Ariz.

9: 89-128 (March) 1925

Industrial Surgery. J. E. Bacon, Miami, Ariz.—p. 91.
Injuries to Head. W. A. Holt, Globe.—p. 94.
Fractures of Long Bones. A. C. Carlson and C. C. Hedberg, Jerome.—p. 96.
Industrial Malingerer. G. A. Bridge, Bisbee.—p. 98.
Operative Treatment of Fractures. W. L. Brown and C. P. Brown, El Paso.—p. 100.
Mental Hygiene Program for University and College. M. L. Neff, Los Angeles.—p. 109.
Cause of Death in Burns. H. P. Mills, Phoenix.—p. 111.

Surgery, Gynecology and Obstetrics, Chicago

90: 305-443 (March) 1925

*Red Stomach. J. Schoemaker, The Hague, Holland.—p. 305.
Experiences with Blood Replacement During or After Major Intracranial Operations. L. E. Davis, Chicago, and H. Cushing, Boston.—p. 310.
Renal Papillomata and Ureteral Implants. D. Bissell, New York.—p. 323.
Application of Facts and Opinions Resulting from Laboratory Experiments to Practical Work of Cancer Control. G. A. Soper, New York.—p. 334.
Cancer Infection. A. J. Ochsner, Chicago.—p. 336.
*Experimental Production of Metastasizing Carcinoma in Breast of Dog and Primary Epithelioma in Man by Repeated Inoculation of Micrococcus Isolated from Human Breast Ulcer. J. W. Nuzum, Chicago.—p. 343.
*Extrinsic Origin of Cancer. W. B. Coley, New York.—p. 353.
Unilateral Fused Kidney. H. L. Kretschmer, Chicago.—p. 360.
Uterine Myomata and Pregnancy; Tumor Necrosis. P. B. Bland, Philadelphia.—p. 367.
Vaginal Cysts. L. M. Miles, Peking, China.—p. 381.
Peritoneal Sac Containing Small Intestines. D. G. Reid, New Cambridge, England.—p. 400.
Fibromata of Mesentery. Case. J. L. DeCourcy and J. J. Maloney, Cincinnati.—p. 402.
Surgical Treatment of Typhoid Carriers in Gowanda State Hospital. W. H. Vosburg, Dunkirk, N. Y., and A. E. Perkind, Helmuth, N. Y.—p. 404.
Lipomata of Sigmoid. J. T. Moore, Houston, Texas.—p. 407.
Results Obtained with Phenoltetrachlorphthalein Test of Liver Function. D. C. Bull and L. Bauman, New York.—p. 411.
Eventration of Diaphragm. Seven Cases. J. R. Verbrycke, Jr., Washington, D. C.—p. 415.
Unusual Type of Paralytic Abduction Deformity of Hip; Operation for Its Cure. L. Mayer, New York.—p. 421.
*Inducing Small Intestine Partially to Function During Course of Acute Diffuse Peritonitis. J. E. Loveland, Middletown, Conn.—p. 424.
Anatomic Exposure for Jejunostomy. I. S. Ravdin, Philadelphia.—p. 426.
Treatment of Pyelitis of Pregnancy with Retention (Indwelling) Ureteral Catheter. Case. J. O. Rush, Mobile, Ala.—p. 428.

Red Stomach.—Schoemaker deals with patients whose anamneses suggest a gastric or duodenal ulcer, but whose symptoms show a capriciousness in appearing, and by influencing the nervous system are of great importance. The chemical examination gives no results, and a series of roentgenograms show no sign of an ulcer. In twelve cases, he performed a gastro-enterostomy; in seventeen, a gastrectomy; in one, the operation of Finney; in seven, an appendectomy; in three, a hemisphincterectomy, and in two, he removed the gallbladder. He recently examined again twenty-six of these patients. Of these, twelve were operated on after the first method of Billroth; and eight of them were totally freed of complaints. In four cases, pains returned shortly after the operation. Roughly speaking, 50 per cent. are cured by a resection. The results of gastro-enterostomy were less favorable, yet two patients remained without any pain, but were not benefited by the operation. Hemisphincterectomy was performed twice, once with a good result, and once with a negative result. A sleeve resection was made once, and once a resection was made after the method of Billroth II. In the former case a cure was effected, in the latter the patient remained unrelieved. An appendectomy without any further resection was performed in five cases. In none of these did the patients get rid of their pains. Two patients had their gallbladders taken out. Both gallbladders were chronically inflamed and both patients are now without any complaints. When a red stomach is found, the gallbladder should be examined. If it is not normal, it should be removed. In case no abnormality is found, the abdomen should be closed or a gastrectomy performed.

Inoculable Micro-Organism in Breast Cancer.—From the result of six years' intensive bacteriologic study Nuzum concludes that there is regularly present in both early human breast cancer and in the transplantable Crocker carcinoma No. 11 and in tumor No. 180 of the mouse the same microorganism. This micrococcus, which belongs to the streptococcus group, is also present in the metastatic growths in the lymph glands as well as in the cutaneous nodules in patients suffering from recurrent breast carcinoma. It has been isolated from primary breast carcinomas less than 1 cm. in diameter and at a time so early in the evolution of this disease as to exclude the probability of its being a secondary invader. It has also been isolated in pure culture from a very early case of acute carcinoma in the human lactating breast where it was possible to determine the earliest histologic lesions of breast cancer. When injected through the nipple ducts into the breast acini of female dogs, two animals out of five surviving a sufficient length of time developed genuine carcinoma of the breast. In one animal, the tumors regressed. The second dog died with generalized carcinomatosis secondary to a huge primary breast cancer. Repeated inoculations of this micrococcus into the skin of the groin of an elderly man, the subject of previous epitheliomas, resulted in the development of a typical squamous cell cancer.

Extrinsic Origin of Cancer.—Coley believes that the parasitic theory of cancer is the only one that offers any real hope of controlling the disease, or of greatly lessening its growing mortality.

Treatment of Acute Diffuse Peritonitis.—The treatment of acute diffuse peritonitis in children is outlined by Loveland as follows: An indwelling stomach tube is used. A high enterostomy is done for drainage and also for nourishment, in fluid form, to be forced along the lumen of the small intestine by gentle elastic pressure from a column of fluid. Five per cent. glucose is probably better than a stronger solution. Continuous hot packs, with electric pad to avoid disturbance should be used.

Texas State Journal of Medicine, Fort Worth

20: 579-636 (March) 1925

*Experiment in Postgraduate Work at Home. W. W. Waite, El Paso.—p. 589.
Some Factors of Safety in Surgical Treatment of Hyperthyroidism. E. O. Rushing, Dallas.—p. 592.
Glaucoma Cases. J. G. Jones, Dallas.—p. 596.
Chronic Cholecystitis. G. M. Underwood, Dallas.—p. 600.
Tetany Following Abdominal Operations. H. T. Wilson, San Antonio.—p. 604.
Cancer of Rectum and Rectosigmoid. C. Rosser, Dallas.—p. 607.
Retroversion. W. R. Cooke, Galveston.—p. 612.
Health Conservation After Forty. W. M. Brumby, Houston.—p. 617.
Tote Fair. J. F. Owens, Plainview.—p. 619.
Joining the Anti-Appendix League. J. W. Focke, Galveston.—p. 621.

Postgraduate Work at Home.—Waite describes the formation and activities of a pathologic club consisting of twelve members who meet together twice a month and listen to and discuss reports on postmortem examination made by one of their members.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian Journal of Experimental Biology and Medical Science, Adelaide

2: 1-59 (March 16) 1925

*Function of Creatin in Muscular Contraction. O. W. Tiegs.—p. 1.
Influence of Certain Dyes on Multiplication of Infusoria (Enchelys) Especially Acriflavine and Proflavine. T. B. Robertson.—p. 21.
Selective Absorption of Chlorin Ions; Absorption of Water by Leaves in Genus Atriplex. J. G. Wood.—p. 45.
Colorimetric Method for Estimation of Guanidin and Methylguanidin. II. Distinction Between Guanidin and Its Methyl Derivatives. H. R. Marston.—p. 57.

Function of Creatin in Muscular Contraction.—Tiegs' studies show that although the creatin content of fresh muscle is only very slightly less than that of fatigued muscle, yet the quantity of "creatin" liberated by fresh muscle is very much less than that liberated by fatigued muscle. The leakage of fatigue products into the blood is discussed. Urinary creatinin appears to be the anhydrid of the basic creatin that is constantly leaking into the blood; the rise in the respiratory quotient, following severe physical exertion, is believed to be due to rapid diffusion into the blood of the lactic acid that is present in large quantity in the muscle throughout the exertion.

British Journal of Dermatology and Syphilis, London

37: 163-212 (April) 1925

*Eczemas of Bread Bakers and Confectioners. R. P. White.—p. 163.
Skin-Diseases Named After Englishmen. H. Goodman.—p. 172.

Eczema of Bread Bakers.—White is convinced that there is no eruption specific to, or distinctive of these industries, unless eczema can be so labeled. Experiments and the clinical evidence strongly suggest that the majority of these cutaneous disorders are incidents rather than consequences of the work.

British Journal of Ophthalmology, London

9: 145-208 (April) 1925

Tonometry. H. Schiotz.—p. 145.
Development of Extra-Ocular Muscles in Some Mammals. O. Leser.—p. 154.
Traumatic Keratitis in New-Born: Two Cases. W. G. M. Byers.—p. 162.
Changes in Refraction in Diabetes Mellitus. W. S. Duke-Elder.—p. 167.

British Medical Journal, London

1: 643-684 (April 4) 1925

Sanocrysin Treatment of Tuberculosis. H. Moellgaard.—p. 643.
*Regional Anesthesia. C. H. Carlton.—p. 648.
*Nodal Fever. A. A. Lendon.—p. 651.
Chemotherapeutic Treatment of Gonorrhea and Its Complications. J. E. R. McDonagh.—p. 654.
Esophagoscopy: Means of Detecting Foreign Bodies Nonopaque to Roentgen Rays. W. F. Wilson.—p. 656.
Separation of Placenta. K. Vaughan.—p. 657.
Torsion of Fallopian Tube. D. J. Davies.—p. 657.

Regional Anesthesia.—Carlton discusses anesthesia in the pelvic area; sacral anesthesia combined with abdominal field-block, regional anesthesia of the neck, regional anesthesia for inguinal hernia, laminectomy and cranial explorations; regional anesthesia in the abdomen and reactions to regional anesthesia. He is an ardent advocate of this method of anesthesia.

Nodal Fever.—The general resemblance that the symptoms and course of nodal fever bear to other acute specific fevers is discussed by Lendon. Fresh evidence pointing to its infectious nature is adduced. Two special symptoms are mentioned. One is somewhat rare, and Lendon has termed it "Verco's sign," as it was first pointed out to him by Sir Joseph Verco in 1892. It consists of subungual striae or dots of hemorrhage, and may be seen on the hands and on the feet. Lendon saw this sign about once in twelve cases. The other symptom is much more common, and consists of one or more phlyctenulae; they are seen on the ocular conjunctiva near the margin of the cornea like tiny spots, or pimples, with a leash of blood vessels like a comet's tail spreading out toward the periphery of the eyeball; generally, they are seated over the insertions of the inner or outer recti, but similar spots may be seen on the palpebral conjunctiva near the tarsal edge. It has a diagnostic importance in the prodromal stage; from its frequency (it occurred in 40 per cent. of the cases) it establishes itself as an integral part of the disease, and in Lendon's opinion is undoubtedly the manifestation of the rash on a mucous membrane. He suggests that the pain complained of in the joints, in both the prodromal and the eruptive stages, may be due to a "node" developing on synovial surfaces.

Edinburgh Medical Journal

32: 153-224 (April) 1925

*Xanthomatosis: Blood Chemistry and Pathology. A. L. Turner, J. Davidson and A. C. White.—p. 153.
Congenital Microcolon. D. M. Greig.—p. 175.
Late Results in Forty-Nine Cases of Perforated Gastric and Duodenal Ulcers. K. P. Brown.—p. 207.

Xanthomatosis.—Four cases of xanthomatosis are described by Turner, Davidson and White, all of which showed disturbed fat metabolism. In the first case, the cause seemed related to definite liver damage, and in the second case to a disturbed fat metabolism in diabetes. The third case showed a primary disturbance of fat metabolism, which might have been prediabetic. The fourth case apparently was of a type intermediate between that of the second and third cases, starting primarily as a disturbed fat metabolism, the carbohydrate metabolism apparently being involved secondarily.

Indian Medical Gazette, Calcutta

60: 93-142 (March) 1925

*Variations in Potency of Digitalis Preparations in Tropics. R. N. Chopra, S. C. Bose and P. De.—p. 93.
Origin of Cholera Epidemics in Jheria Coal-Fields. G. C. Maitra.—p. 97.
Treatment of Asthma. H. W. Acton and R. N. Chopra.—p. 101.
Migration of Hookworm Larvae in Soil. A. C. Chandler.—p. 105.
Cure of Schistosomiasis by Intravenous Injection of Antimony Tartrate. J. B. Christopherson.—p. 108.
Treatment of Stiff Joints. H. Hallilay.—p. 111.
Detaining of Patients in Hospital. C. C. Murison.—p. 113.
Left-Handedness. P. C. Das.—p. 116.
Useful Method of Adapting an Artificial Eye to Normal or Reconstructed Socket. R. E. Wright.—p. 120.
Two Interesting Cases of Post-Typhoid Sequelae. A. B. de Castro.—p. 122.
Unusual Case of Malaria. V. N. Deuskar.—p. 122.
Stricture of Ileo-Cecal Valve, and Hyperplasia of Cecum from Tuberculosis. E. F. Neve.—p. 123.
Tumor of Ovary: Two Cases. S. C. das Gupta.—p. 124.
Strangulated Hernia: Case. S. N. Misra.—p. 125.
Pulmonary Embolism: Case. S. Serhachar.—p. 126.
Traumatic Ptosis: Case. P. B. Karkarey.—p. 126.
Calcium Lactate, Preventative of Still-Births. D. Perera.—p. 126.

Potency of Digitalis in Tropics.—Chopra, Bose and De direct attention to the fact that clinical observations as well as biologic and chemical assays of tincture of digitalis show that it undergoes deterioration rapidly in a tropical climate such as that of India. This deterioration cannot be accurately determined by any single method in the laboratory, such as Hatcher's "cat method"; the "frog method," or Kundson and Dresbach's chemical method. Clinical tests give the most reliable information. The average dose of 5 c.c. (or 4.25 gm.) of the tincture per hundred pounds of body weight required to get the patient under digitalis effect in from thirty-six to

forty-eight hours is considerably increased after the tincture has been in the tropics even for a short time. Deterioration is due to some change in the digitalis glucosids, the nature of which has not yet been determined. Such tinctures are more toxic to cats when given intravenously, but a considerable weakening in the therapeutic efficacy is evident. With tinctures of standard strength, doses of at least 20 to 30 minims (1.25 to 1.9 c.c.) three times a day, should be given. If rapid effects are desired in urgent cases, these may be increased from 45 to 60 minims (2.8 to 3.75 c.c.) till the amount calculated by Eggleston's method is given.

Indian Medical Record, Calcutta

65: 65-96 (March) 1925

Asthma. A. Roy.—p. 65.
Duty Toward Future Generation. P. Ganguli.—p. 74.
Prognosis of Epidemic Dropsy. K. C. Dutt.—p. 77.
Ascaris Lumbricoides. V. Gopaulkristna.—p. 78.

Japan Medical World, Tokyo

5: 51-82 (March 15) 1925

Narcosis by Ethylidenchlorid, Methylenchlorid and Their Mixtures. D. M. Rossyisky.—p. 51.
Relation of Precipitinogen and Precipitin in Vivo. T. Oguchi.—p. 53.

Journal of Laryngology and Otology, Edinburgh

60: 213-284 (April) 1925

Malignant Tumors of Esophagus. J. Guisez.—p. 213.
Influence of Anesthesia of Peripheral Nerves on Peripheral and Central Past-Pointing. A. Precechtel.—p. 233.
Bleeding in Tonsil Operations. J. K. M. Dickie.—p. 243.
Case of Xanthoma Tuberosum; Extensive Distribution of Nodules on Mucous Membrane of Respiratory Tract. A. L. Turner.—p. 249.
Severe Early Symptoms as Indication for Opening Tympanic Antrum in Acute Suppuration of Middle Ear. D. M'Kenzie.—p. 252.

Journal of State Medicine, London

33: 151-200 (April) 1925

*Phthisis and Industrialism with Reference to Other Infectious Diseases. E. L. Collis.—p. 151.
Spread of Infectious Disease. S. F. Dudley.—p. 188.

Phthisis and Industrialism.—Collis finds that British records give the original clue to the meaning of variations in the international records. They display a malnutrition effect: rising in Ireland while the wear-and-tear effect lessened; falling in Scotland to leave a wear-and-tear effect for males appearing in the picture; falling more in England and Wales, and leaving a wear-and-tear effect for males in dominance. These results are in agreement with social and occupational changes occurring in each country that are due to industrial development, and can be paralleled within the countries by appeal to records for districts at different stages of development. Further, phthisis mortality, particularly in early life, is higher for the sex which at any age has the greater need for nutrition, as determined by physical measurements.

Lancet, London

1: 697-748 (April 4) 1925

Gastric Function in Health and Disease. J. A. Ryle.—p. 697.
Suggestion in Social Life. R. Armstrong-Jones.—p. 705.
*Toxin of Streptococcus Scarlatinae. H. Henry and F. C. Lewis.—p. 710.
*Dick Test in Scarlet Fever. C. C. Okell and H. J. Parish.—p. 712.
*Experimental Production of Cancer. G. M. Findlay.—p. 714.

Toxin of Scarlatinal Streptococcus.—Henry and Lewis report on an investigation of the toxin of *Streptococcus scarlatinae*, more particularly with reference to the best methods of preparing it, and special attention has been devoted to the preparation of stable products by means of precipitation. The latter, they believe, represent the first step toward a successful measure of the toxin, and so offer a method of approach to a standard Dick test.

Dick Test in Scarlet Fever.—Among ninety-five medical students subjected to the Dick test by Okell and Parish, 74 per cent. gave positive response. Among twenty who had a history of scarlet fever, 65 per cent. gave a positive reaction; of seventy-five students who had no history of scarlet fever, 24 per cent. were negative to the Dick test. Among 120 patients entered in the hospital records as convalescent from scarlet fever, 82 per cent. gave a negative reaction; among the twenty-two (18 per cent.) with a positive reaction there were six giving a strongly positive reaction, who were considered to have had a definite attack of scarlet fever.

Experimental Production of Cancer.—The effect of a single application of hot tar to the skin of seventy-five mice was followed after a year by the development of a typical epithelioma, in only three cases showing that the action of carcinogenic agents on the cell is mediate rather than immediate.

Medical Journal of Australia, Sydney

1: 251-274 (March 14) 1925

*Hemochromatosis: Two Cases. E. Russell.—p. 251.
Survey of Infestation with Echinococcus Granulosus (Batsch) in New South Wales. I. C. Ross.—p. 253.
Hydatid Diseases of Liver. F. D. Bird.—p. 258.
*Case of Laryngeal Diphtheria. F. W. R. Lukin.—p. 262.

Hemochromatosis.—In one of Russell's cases the discoloration occurred in the prediabetic state, and in the other case in a patient with diabetes.

Laryngeal Diphtheria Necessitating Prolonged Intubation.—Lukin performed intubation on his patient every day for ten days, and on several days more than once and as often as four times. On one day the tube was introduced no less than thirteen times. At no time during the whole period was the tube in the larynx for more than twenty-four hours continuously, as it was removed after that time if not coughed out.

1: 275-302 (March 21) 1925

Biology of Cell. L. Harrison.—p. 275.
Bearing on Study of Living Matter. O. U. Vonwiller.—p. 277.
Tissue Culture as Method of Cancer Research. I. M. Mackerras.—p. 280.
*Chronic Irritation and Malignancy. F. P. Sandes.—p. 285.
Varicella Following Herpes Zoster. G. Brown.—p. 286.

Chronic Irritation and Malignancy.—Sandes suggests that, in the presence of long continued irritation, the reaction of cells to injurious stimuli, and the pathologic consequences arising therefrom, are largely due to disturbance of their potassium distribution and metabolism, and that in certain types of malignant growth the same cause is at work.

Practitioner, London

114: 249-316 (April) 1925

Meddlesome Midwifery. H. Simson.—p. 249.
Female Sterility and Ductless Glands. F. J. McCann.—p. 258.
Eye as Index of Age. E. Clarke.—p. 267.
Venous Pressure Changes in Aortic Lesions. D. T. Barry.—p. 274.
Relative Value of Symptoms and Physical Signs in Early Diagnosis of Pulmonary Tuberculosis. D. G. M. Munro.—p. 283.
Chronic Nasal Sinus Inflammation. W. J. Harrison.—p. 298.
Acute Intussusception in Adult, Probably Due to Round Worms. F. Keane.—p. 306.
Value of Pituitary Extract in Labor. D. J. O'K Murphy.—p. 309.

South African Medical Record, Cape Town

23: 89-112 (March 14) 1925

Adenotonsillectomy. J. C. G. Macnab.—p. 90.
Calcium Metabolism of Body and Its Bearing on Teeth. H. J. Schoeman.—p. 94.
Rupial Eruption of Unusually Large Dimensions. A. R. Fraser.—p. 96.
Actinotherapy in Medical Practice. F. H. Dommisse.—p. 98.
Case of Melanosarcoma of Plica Semilunaris. J. S. Steyn.—p. 99.

Tubercle, London

6: 313-368 (April) 1925

Tuberculosis of Nervous System. A. Feiling.—p. 313.
Effect of Seasons on General Condition and Increase in Weight of Tuberculous Patient. N. Lunde.—p. 323.
Epithelioid Cells of Tuberculous Lesions. M. R. Lewis, H. S. Willis and W. H. Lewis.—p. 329.
Tuberculous Infection and Tuberculosis as Modified by Experimental Pneumonokoniosis. L. U. Gardner.—p. 336.

Bulletin de l'Académie de Médecine, Paris

93: 289-316 (March 17) 1925

Separation of the New-Born from Tuberculous Parents. L. Bernard et al.—p. 299. See Paris Letter, p. 1285.
Cutaneous Leishmaniasis in French Guiana. L. Nattan-Larrier.—p. 308.
*Domestic Electric Accident. A. Zimmern.—p. 310.
Abstract Conception of Anthropometry. B. Roussy.—p. 311.

Injury from Electric Curling Iron.—The muscular contraction from the shock from the short-circuiting was so intense

that the wrist was fractured. Neuritis in both shoulders followed, entailing arthritis, with ankylosis still persisting.

93: 317-347 (March 24) 1925

*Action of Insoluble Bismuth. C. Levaditi et al.—p. 326.
Study of Insulin Treatment of Diabetes. Chabanier et al.—p. 333.
*Enrichment of Tubercle Bacilli in Sputum. F. Barbary.—p. 340.
*Iodin in Sea Air. A. Loir and H. Legangneux.—p. 343.

Effect from Insoluble Bismuth.—Levaditi, Nicolau and Schoen reiterate that injected intramuscularly, the insoluble bismuth salt is retained in the muscle tissue for months, and is only slowly liberated. Owing to this gradual elimination of the bismuth, the kidneys are not injured. Minimal quantities of bismuth, however, suffice to destroy the spirochetes.

Detection of Tubercle Bacilli in Sputum.—Barbary recommends Ronchèse's acetone method as particularly convenient in current practice for the enrichment of tubercle bacilli. The centrifuge is not needed as the bacilli rise to the surface of the liquefied sputum and are held in the pellicle forming at its contact with the acetone.

Iodin in Sea Air.—Loir and Legangneux emphasize that the iodin in sea air is in the organic form. Gautier's analysis of sea water showed the presence of 2.32 mg. of iodin per liter. While at a certain depth of the sea the iodin is inorganic, at the surface it is organic. The sea air, due to the fact that seaweeds, etc., yield the iodin to the air by their spores and débris, contains thirteenfold more iodin than the air at Paris. The tonic action of sea air is explained in part by the presence of this organic iodin, which is assumed to be easily assimilated.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 377-430 (March 13) 1925

"Septicemia-Pyemia." Laubry.—p. 377.
*Recklinghausen's Osteitis. J. A. Sicard and J. Chauveau.—p. 378.
Pulmonary Abscess. L. Babonneix and M. Lévy.—p. 382.
*Diagnosis in Case of Bronchiectasis. A. Coyon et al.—p. 385.
Syndrome from Anterior Cerebral Artery. C. Foix and P. Hillemand.—p. 389.
*The Splenium Responsible for Alexia. C. Foix and P. Hillemand.—p. 393.
*Streptococcus Toxin and Dick Test. J. Paraf.—p. 395.
French Binaural Stethoscope. P. Armand-Delille.—p. 401.
Artificial Pneumothorax in Children. P. Armand-Delille et al.—p. 401.
*Asthma and Tachycardia. Laubry and Mussio Fournier.—p. 404.
*Primary Cardiac Insufficiency. C. Laubry and J. Walser.—p. 409.
Tuberculous Splenopneumonia in Child. Armand-Delille et al.—p. 426.

Multiple Fibrous Osteoplastic Osteitis.—In Sicard and Chauveau's case of Recklinghausen's bone disease in a woman, aged 50, the bone lesions did not present the aspect of cysts, but rather of geodes, filled with a spongy reddish tissue. The wall of these pseudocysts is usually so softened that puncture may be made directly through the skin. The roentgen rays showed the iodized oil, introduced in the pseudocysts or marrow canal, settling down to the cancellous tissue of the epiphysis. This method of exploration of bone canals may be of aid in diagnosis.

Bronchiectasis in Girl, Aged 15.—The dilatation of the left bronchus had been entailed by bronchopneumonia from influenza, more than six years before. The diagnosis was based on the findings after intratracheal injection of iodized oil. A previous ordinary roentgen-ray examination had failed to reveal the bronchiectasis.

Rôle of Splenium of Corpus Callosum in Pathogenesis of Alexia.—Foix and Hillemand observed a patient with constant pain of the thalamic type in the right side and a right hemianopia, consecutive to cerebral hemorrhage. Word-blindness did not appear in this case, although necropsy showed the characteristic lesions at the base of the brain. The conservation of reading ability in the patient is ascribed to the fact that the splenium of the corpus callosum remained intact. Only a lesion of the splenium, checking the transmission of visual impressions to the language centers, entails alexia.

Streptococcus Toxin and the Dick Test.—Paraf applied the Dick test to seventy-eight adults, with a positive response in 33 per cent. He used toxins, prepared by the Dick method, from hemolytic streptococci found in the throat of scarlet fever patients, as well as toxins from streptococci in malignant endocarditis, erysipelas and puerperal infection. Control tests were made with Dick toxin. The skin reaction with toxins of these different hemolytic streptococci was identical with the reaction from streptococci isolated from the scarlet fever cases. He queries, with Bristol, whether scarlet fever may not be merely a reaction of the hypersensitive to streptococcus proteins, occurring in certain conditions of sensitization. Or do the facts observed suggest a paraspecific immunity, analogous to the phenomenon of agglutination of proteus strains in typhus?

Common Origin of Asthma and Paroxysmal Tachycardia.—Laubry and Mussio Fournier report four cases in which each paroxysm of tachycardia had been constantly followed by an attack of asthma, and three other cases with tachycardia occurring after asthma, persisting for years, had disappeared. The two syndromes seem to be caused by loss of balance in the vegetative system, manifested in different organs. Shock treatment, which has proved useful in asthma, may be found effectual also in paroxysmal tachycardia.

Case of Primary Heart Insufficiency.—Laubry and Walser call attention to a case of cardiac insufficiency without any organic lesion of the myocardium. The functional disturbance involved the tonicity and the contractibility of the myocardium. They theorize to explain its nervous, endocrine and hematologic origin.

Comptes Rendus de la Société de Biologie, Paris

92: 665-764 (March 13) 1925. Partial Index

*A Fungus Found on the Tonsil. A. Hranova.—p. 670.
*Action of Drugs on Complement Fixation. Brocq-Rousseu et al.—p. 672.
*Normal Epinephrinemia. E. Gley and A. Quinquaud.—p. 674.
*Streptococcus-Staphylococcus Alterotoxin. C. Zoeller.—p. 686.
*Vaccination Against Anthrax in Horses. E. Nicolas.—p. 693.
*Autoreinfection in Guinea-Pigs. J. Paraf.—p. 694.
Action of Insulin on Lactic Acid in Blood. L. Servantie.—p. 700.
Vital Staining for Eye Examination. Pesme and Gonzales Sierra.—p. 702.
*Structure of Krukenberg's Tumor. Gleize-Rambal and Robert.—p. 708.
Mechanism of Closure of Mitral Valve. Périot.—p. 712.
*Desensitization Agent from India Ink. Moldovan and Zolog.—p. 720.
*Cerebellum and Organic Functions. V. Papilian and H. Cruceanu.—p. 722.
*Thyroid in Healing of Fractures. J. Goldner.—p. 725.
Arterial Pressure and Blood Platelets. Roskam and Brull.—p. 736.
Electric Excitability of Human Eye. C. D. Verryp.—p. 742.
*Action of Insulin on Heart Glycolysis. R. Cousy.—p. 750.
Pseudo-Attenuation of Herpes Virus. M. le Fèvre de Arric.—p. 759.
Toxicity of Serum Globulins. J. Bordet and E. B. McKinley.—p. 762.

Torula Fungus Found on Tonsil.—Hranova describes the micro-organism found on the tonsil of a young girl.

Effect of Strychnin and Chloroform on Complement Fixation.—Brocq-Rousseu, Cauchemez and Urbain affirm that lethal doses of strychnin or chloroform injected into the lungs of dogs inhibited the hemolytic property of the serum. Hence a positive tuberculosis complement fixation reaction may become negative under the influence of drugs.

Value of Physiologic Epinephrin Secretion.—Gley and Quinquaud's experiments demonstrated that epinephrin, as normally secreted by the suprarenals, has no physiologic importance in rabbits.

Reaction from Alterotoxin.—Continuing his work in cumulative cultures, Zoeller prepared an alterotoxin, by cultivating staphylococci in streptococcus toxin, which induced a positive reaction in a subject with a positive Dick test. The reaction is considered as identical with the Dick test. No reaction occurred with heated alterotoxin. The reaction could be neutralized by the serum of convalescents from scarlet fever.

Preventive Vaccination Against Anthrax in Horses.—Nicolas' statistics cover 8,912 horses and mules with the army in the Near East. With subcutaneous inoculation of antianthrax serum, used in treatment during epizootic prevalence of anthrax, the loss in animals was 8.1 per thousand, but after introduction of preventive intradermal vaccination, only 0.45 per thousand developed anthrax.

Immunity and Reinfection in Tuberculous Guinea-Pigs.—Guinea-pigs with experimental tuberculosis were inoculated

with an emulsion of their own pus and with pus of other tuberculous guinea-pigs. The immunity in the animals proved to be much less effective against reinfection with bacilli from their own lesions than with bacilli from other animals. The bacilli themselves seemed to become immunized.

Gastric Origin of Krukenberg's Tumor.—Referring to fifteen ovarian tumors of the Krukenberg type examined, Gleize-Rambal and Robert say that the tumor develops undoubtedly from aberrant gastro-intestinal cells, particularly of gastric gland origin.

Desensitization Induced by India Ink.—After having injected India ink intravenously in rabbits and guinea-pigs, Moldovan and Zolog found in the blood of the animals a new desensitization element. It seemed to prevent the anaphylactic shock. They think it was probably secreted in the liver.

Rôle of Cerebellum in Function of Organs and in Nutrition.—Injuries to the cerebellum, induced by Papilian and Cruceanu in twelve dogs, were followed by an acceleration of the heart beat and respiratory movements. The oculocardiac and oculorespiratory reflexes became exaggerated. The amount of sugar and of nitrogen in the blood was augmented. The medulla oblongata and the brain seemed to be intact.

Thyroid Function During Consolidation of Fractures.—Examination of the thyroid in guinea-pigs with fractured bones showed a hyperfunctioning of the gland. The function was particularly exaggerated on the appearance of the provisional bone callus. The phenomenon is ascribed to fixation of calcium salts in the thyroid.

Glycolytic Property of Heart Tissue.—Cousy concludes from perfusion experiments on the isolated heart in rabbits that the heart tissue contains a glycolytic agent. Insulin exerted an inhibiting action on this element.

Encéphale, Paris

20: 137-208 (March) 1925

Paranoid Psychoses. H. Claude.—p. 137.
Movements of Eyes in Parkinsonism. Bing and Schwartz.—p. 150.
Regulation of Ammonia Metabolism. G. E. Schröder.—p. 159.
Ascending Degeneration in Spinal Cord. E. Kononova.—p. 174.
*Serotherapy in Delirium Tremens. H. Damaye.—p. 187.

Importance of Serum Treatment of Delirium Tremens.—Damaye emphasizes the menace of grave septicemia to drunkards, who offer usually a lower resistance to the latent microbes. He suggests to inject, as soon as delirium tremens appears, a specific bacterial antiserum. If the nature of the microbe cannot be established, a polyvalent serum may be used. Antipneumococcus serum gives often excellent results, if the streptococcus is not involved. A turpentine fixation abscess following the antiserum injection is considered a very important adjuvant.

Gynécologie et Obstétrique, Paris

11: 161-240 (March) 1925

Tuberculosis of the Body of the Uterus. C. Daniel.—p. 161.
*Cystoscopy in Uterine Cancer. R. Gouverneur and S. Fabre.—p. 189.
The Kjelland Forceps. Brindeau and Lantuéjoul.—p. 199.
*Diathermy in Sterility. C. A. Castaño.—p. 207.

Cystoscopy in Uterine Cancer.—On the basis of 200 cases examined, Gouverneur and Fabre believe that cystoscopy is of great utility preliminary to, during and after radium treatment of cancer of the uterine cervix. The cystoscope reveals involvement of the bladder, and whether the lesions found are merely inflammatory or metastases.

Diathermy in Treatment of Sterility.—Castaño advocates diathermy treatment in sterility, particularly with infantile uterus. Satisfactory results are attained with a uterus measuring not less than 5 cm., if the walls of the organ are not too thin, and the mucosa not too much atrophied. One electrode is applied to the abdomen, and another, connected with it, to the back, while a metal rod is placed in the vagina, if the uterus is in anteflexion. With retroflexion, a thinner rod is placed in the rectum while the abdominal electrode is applied to the hypogastrium. The heat is stronger in the narrowest electrode, the rod. A current of 1 to 1.5 amperes is used in the beginning, reaching gradually 2.5 amperes. The sittings are repeated every second day, each lasting from thirty to forty-five minutes. Twenty applications are followed by a month's rest if the series is to be repeated. After ten sittings, the uterine cavity became enlarged by 2 cm., and menstruation more normal. One of the twenty patients thus treated became pregnant after the first series.

Journal de Médecine de Lyon

6: 157-200 (March 20) 1925

*Tuberculosis of the Iris. Rollet and Colrat.—p. 157.
Inflammation of the Iris and Choroid. L. Genet.—p. 167.
Serum and Vaccine Treatment in Ophthalmology. M. Busay.—p. 183.
*Paralysis in Ophthalmic Zoster. J. Rosnoblet.—p. 191.

Clinical Forms and Treatment of Tuberculosis of the Iris.—Rollet and Colrat analyze eighteen cases observed, one case per two thousand ophthalmologic patients. Tuberculosis of the iris occurred mostly between 5 and 30 years of age, 56 per cent. in males. The three forms of the affection, inflammatory, nodular and the tuberculoma, appeared successively or isolated. While tuberculoma ended in destruction of the eyeball, the other forms healed spontaneously. Irradiation treatment gave encouraging results. Two of their patients have been cured for three or four years to date; twelve required enucleation at the time or later, with death of one infant after the enucleation. Only three have died since, two from intercurrent disease.

Paralysis of Motor Oculi in Ophthalmic Zoster.—Rosnoblet calls attention to the fact that paralysis is not rare, but may pass unnoticed among the more pronounced symptoms of ophthalmic zoster. The paralysis, after having persisted for weeks or months, always disappears completely, while the sensory disturbances in herpes zoster may last interminably, especially in the elderly.

Médecine, Paris

6: 413-488 (March) 1925

Cardiovascular, Renal and Blood Pathology in 1925. Ribierre.—p. 413.
Origin of Mitral Stenosis. Merklen.—p. 423.
*The Heart with Gallbladder Disease. C. Lian.—p. 428.
The Prognosis in Arterial Hypertension. P. Ribierre.—p. 436.
*Death with Adams-Stokes Syndrome. E. Donzelot.—p. 442.
Diagnosis of Mitral Stenosis. L. Gravier.—p. 446.
*Salicylate in Heart Disease. E. Pichon.—p. 451.
*Hypercholesterolemia in Nephritis. Guy-Laroche.—p. 457.
Elimination of Water in Hypertension. J. Cottet.—p. 460.
Thorium X in Leukemia. C. Aubertin.—p. 465.
Prognosis in Anemia. R. J. Weissenbach.—p. 469.
To Promote Blood Coagulation. M. Perrin.—p. 475.
Pectine as Hemostatic Agent. H. Violle.—p. 481.

Grave Heart Manifestations in Gallbladder Disease.—Lian emphasizes the rôle that biliary lithiasis and cholecystitis without gallstones may play in the etiology of heart disturbances. They may range from palpitations, extrasystolic arrhythmia, paroxysmal tachycardia and protracted syncope to angina pectoris and sudden death.

Death with Adams-Stokes Syndrome.—Donzelot reports two cases. His explanation is that death occurs after a phase of irregular tachycardia from ventricular fibrillation. The latter does not depend on disturbances of auriculoventricular conduction, but seems to be due to certain changes in the ventricular automatism itself.

Sodium Salicylate in Heart Disease.—Pichon does not agree that sodium salicylate, even in large doses, may exert an unfavorable action on the heart. Therefore, he says, the drug should be administered as long as the rheumatic process continues.

Rôle of Suprarenals in Hypercholesterolemia with Nephritis.—Guy-Laroche noted a considerable increase of cholesterol in the suprarenals in hypercholesterolemia of renal origin, while the suprarenals played no part in the pathogenesis of hypercholesterolemia of hepatic origin. He argues that cholesterol originates in the suprarenal cortex, and is not merely deposited in it.

Nourrisson, Paris

13: 65-140 (March) 1925

The Children's Department at Herold Hospital. H. Barbier.—p. 65.
*Urticaria in Young Children. M. Péhu and A. Simitch.—p. 81.
Conc'n.

Congenital Debility. A. B. Marfan.—p. 100.
Euphoria in Fever in Infants. E. Weill and P. Bertoye.—p. 115.
Separation of Infants from Tuberculous Parents. P. F. Armand-Delille. —p. 119.

Urticaria in Young Children.—Péhu and Simitch refer to urticaria which develops and progresses according to a definite rhythm of recurrence, and persists an almost equal number of days or weeks each time. Whatever the etiology of urticaria in young children, it has the aspect of a disturbance of anaphylactic nature. The administration of a protein by the mouth, one hour before meals, combats this anaphylaxis. Usually, 0.25 to 0.50 gm. of peptone is given, dissolved in a teaspoonful of fluid. This protein therapy is generally borne without disturbance. It might be well to obtain a special peptone from the element of the food involved, and add syrup and glycerol, to render it more palatable and to keep it.

Presse Médicale, Paris

33: 401-416 (March 28) 1925

*Metabolism with Deficient Nourishment. Labbé and Stévenin.—p. 401.
*Treatment of Pleurisies from Pneumothorax. A. Pissavy.—p. 402.
Liver Insufficiency and Acidosis in Melancholia. Aubel et al.—p. 403.
*Intraspinal Anesthesia. G. E. Vaquié.—p. 405.

Changes in Respiratory Metabolism from Deficient Alimentation.—Labbé and Stévenin estimated the basal metabolism in ten subjects in prolonged undernutrition from a nervous lack of appetite, or from anorexia due to a digestive affection. The basal metabolism was reduced from 11 to 39 per cent. in the majority. The finding may be of help in an early differential diagnosis of exophthalmic goiter, tuberculosis and certain febrile diseases, in all of which the metabolism is increased.

Treatment of Pleurisy Complicating Artificial Pneumothorax.—Reviewing different methods of treating pleurisy secondary to artificial pneumothorax, which is said to occur in about 60 per cent. of the cases, Pissavy warns that the effusion should not be removed in simple pleurisy with effusion unless absolutely necessary. In the form tending to adhesions, the withdrawing of the liquid appeared to be useless. Grave septic pleurisy developed in 2.7 per cent. of his 254 therapeutic pneumothorax cases, and proved fatal in all.

Simplified Technic for Intraspinal Anesthesia.—Vaquié has developed his method as the result of an experience covering 2,250 cases in sixteen years. No fatalities occurred with the technic of anesthesia described.

Schweizerische medizinische Wochenschrift, Basel

55: 245-268 (March 19) 1925

*Adaptation of Eye. A. Brückner.—p. 245.
Complement Fixation and Flocculation in Syphilis. Gonin.—p. 252. Cont'd.
Block Phenomena in Malignant Endocarditis. G. Bickel.—p. 255.
The Gods of Healing on Classical Coins. O. Schirmer.—p. 258.

Adaptation of Eye.—Brückner discusses the various phenomena of adaptation (to light, darkness, squinting, hemianopia) observed in eyes.

Policlinico, Rome

32: 411-441 (March 23) 1925

*Periarterial and Perineural Sympathectomy. S. Rolando.—p. 411.
*Intestinal and Hepatic Amebiasis. A. Ricci.—p. 414.

Periarterial and Perineural Sympathectomy. — Rolando found that periarterial sympathectomy and Negro's electrolytic decortication of the sciatic nerve gave about equal proportions of curative results and failures.

Intestinal and Hepatic Amebiasis.—Ricci examined histologically the organs of a man who had been treated with emetin for amebic dysentery and liver abscess. He had died from pneumonia. The intestinal lesions and the abscess gave evidence of recovery from the amebiasis.

Anales de la Facultad de Medicina, Montevideo

9: 1005-1084 (Nov.) 1924

*Osteochondritis Deformans of the Femur. J. Cunha.—p. 1005.
*Giant Esophagus. D. Prat.—p. 1021.
*Skin Reactions in Pathology. J. Peyri.—p. 1034.
Lipoma in Neck Simulating Congenital Cyst. A. D. Roldán.—p. 1051.
*Case of Megaduodenum. L. Merola and C. V. Nario.—p. 1053.
Tubercle Bacilli from Cerebrospinal Fluid. Prunell and Galmes. —p. 1069.

Coxa Plana.—Cunha describes three cases of the Legg-Perthes-Calvé hip affection in children. He ascribes it to some defect in osteogenesis for which rickets is probably responsible.

Mega-Esophagus.—The cardia was intact in Prat's two cases. The bag of the giant esophagus was joined to the stomach through a transdiaphragmatic incision in the young woman, but a cardiac syncope the next day proved fatal. His second case, in a man, aged 30, shows that merely drawing down the giant esophagus through the hiatus, which was made larger (Sencert), was followed by a functional cure and return of the esophagus to normal size. Recurrence of slight symptoms a few months and again more than two years later, revealed the same anatomic conditions in the esophagus as before the operation. The cardia in both cases was apparently intact, and the dilatation was secondary to constriction of the esophagus where it passed through the diaphragm. The constriction may have been secondary to some neighboring process; there was an old history of a vomica in the second case.

Skin Reactions and Dermatoses.—Peyri asserts that pure skin reactions are to the skin what neuroses are to the nervous system. The skin reaction is a constant function of the individual, a wave-like function of the age and genital life, and a variable function of some external or internal physical, chemical or parasitic exciting agent. If investigated as we psychanalyze a neurosis, each skin reaction would reveal a substratum of a sexual nature.

Case of Megaduodenum. — The giant duodenum became materially reduced in size after a simple gastro-enterostomy. Merola and Nario confirmed by roentgenography and operation the double ring of spastic contracture at Keith's nodal points. No mechanical factors otherwise could be found, but necropsy two months later revealed a peribronchial abscess at the bifurcation which might have irritated both pneumogastrics as the cause of the spasms.

Gaceta Médica de Caracas

31: 305-320, 1924

Microscopic Findings in Carcinoma of Eyeball. Romero Sierra—p. 305.
*Obliquus Paralysis with Graefe Sign. L. López Villoria.—p. 306.
*Fight Against Social Scourges in Denmark and Netherlands. Rafael Medina Jiménez.—p. 307.

Exophthalmos Without Hyperthyroidism. — The aspect of the eyes is that of typical exophthalmic goiter but there are no other symptoms to indicate hyperthyroidism, or syphilis. The protrusion of the eyes is not extreme but the upper eyelids are retracted to the utmost, and the Graefe sign is pronounced. This condition developed after a year of diplopia and paralysis of the left inferior oblique, becoming bilateral. López Villoria adds that tentative treatment for syphilis has been as futile as all the other measures tried during the year to date.

Restriction of Alcohol in Denmark and the Netherlands.—Medina Jiménez was much impressed with the progress made by Denmark in combating abuse of alcohol by raising the price, reducing the number of saloons and closing them on Sundays and holidays, with local option as to the opening of any saloons. He was one of the League of Nations' interchange health officers, and gives an informal account of his impressions.

31: 337-352, 1924

*Bilharziasis in Caracas. Juan Iturbe.—p. 337.
Present Status of Rickets. Villegas Ruiz.—p. 341.

Bilharziasis in Caracas.—Iturbe describes the life cycle of *Schistosoma mansoni* and the success of prophylaxis by combating the snail intermediate hosts, and treating the affected persons.

Prensa Médica Argentina, Buenos Aires

11: 869-900 (Feb. 20) 1925

*Paralysis Agitans. M. R. Castex et al.—p. 869.
Phagocytosis in Peritoneum of Rats and Guinea-Pigs. Mazza.—p. 879.

*Appendicitic Dysmenorrhea. C. A. Castaño.—p. 881.
*Congenital Familial Diplegias. J. J. Moyano.—p. 884.
Reducing Power of Serum of Rats with Cancer. A. H. Roffo.—p. 890.

Paralysis Agitans.—Castex, Romano and Camauer give eleven photomicrograms from a typical case of Parkinson's disease. The characteristic lesions were not confined to the lenticular nucleus but were found also in the putamen and caudate nucleus.

Dysmenorrhea in Appendicitis.—Castaño has often found it possible to differentiate appendicitis from adnexitis by dysmenorrhea in women usually previously free from it. The acute pains appear two or three days before the menstrual period and return the first day, most severe in the right ovary and appendix region, spreading down the leg. With ovaritis the menstrual pains spread throughout the abdomen. He has found appendicular dysmenorrhea in 90 per cent. of his cases of appendicitis. No adhesions were found with the adnexa at operation; the congestion causes exacerbation of the appendicitic process.

Congenital Familial Diplegia.—The three brothers, all under 7, present typical progressive bilateral cerebral spastic paralysis. The sister, aged 6, is normal. The parents are healthy but are second cousins.

11: 901-928 (Feb. 28) 1925

The Sympathetic and the Endocrine Factors in Dermatoses. M. R. Castex and A. F. Camauer.—p. 901. Cont'd.
*The Pupils with Intracranial Hypertension. E. Adrogué and M. Balado. —p. 908.
*Direct Treatment of Varicose Veins. T. Gioia.—p. 916.
Complement Fixation in Tuberculosis. A. Prunell.—p. 921.
Adsorption Properties of Stains. Roffo and Barbará.—p. 924.

Pupil Signs of Intracranial Hypertension.—Adrogué and Balado conclude from their experiments on dogs, etc., that dilatation of the pupil is a sign of ventricular hypertension when it is extreme, and the pupil does not contract during sleep. Unilateral, it corresponds to the side of the skull involved. The absence of severe respiratory and heart symptoms differentiates bilateral dilatation due to ventricular hypertension from that of subarachnoid hypertension.

Direct Treatment of Varicose Veins.—Gioia illustrates the fine results obtainable with direct injection into the varicose vein of a solution of quinin (Génévrier), even after failure of other measures, including sympathectomy. No anesthesia is required and no appreciable scar is left. The harmlessness of the procedure as applied to outpatients justifies its application, he declares, even in mild cases, while it may prove effectual in the gravest.

Semana Médica, Buenos Aires

1: 561-616 (March 12) 1925

*Anatoxin-Antitoxin in Experimental Diphtheria. C. E. Pico.—p. 561.
Correction of Prolapse of Uterus by Operation on Vagina. A. Althabe. —p. 562.
*Tuberculin Treatment. A. Blanco and F. Gallino.—p. 564.

Immunizing Action of Anatoxin-Antitoxin Mixture in Experimental Diphtheria.—Pico relates that injection in five rabbits and ten guinea-pigs of the minimal lethal dose of living diphtheria bacilli and, at the same time, injection at another point of 2 or 3 c.c. of a mixture of anatoxin and antitoxin warded off the fatal outcome. All but one in each group of the controls died. He remarks that this is the first time that an account has been published of active immunization against a lethal dose of diphtheria bacilli, and by a means capable of application in prophylaxis during epidemics. The anatoxin was in excess in the mixture.

Tuberculin Treatment of Pulmonary Tuberculosis.—Blanco and Gallino give details of 309 cases with systematic tuberculin treatment, saying that the extremely rare and meager benefit realized with it is generally due to suggestion, coincidence and the other measures applied with the tuberculin.

Archiv für Verdauungskrankheiten, Berlin

34: 275-408 (Feb.) 1925

Carcinoma of Papilla of Vater. M. Einhorn and De Witt Stetten.—p. 275.
Digestion of Starch and Cellulose in Man. L. Strauss.—p. 288.
*Gastric Function Test. K. Glaessner and H. Wittgenstein.—p. 303.
*Chromoscopic Gastric Function Test. R. A. Luria and A. I. Mikrin.—p. 325.
*Influence of Fats on Stomach Secretion. H. Kalk.—p. 333.
Formation of Lactic Acid in Gastric Cancer. B. Mendel and W. Engel. —p. 370.
The Pylorus Passage. T. Bársony et al.—p. 380.
*Effect of Bitters on Gastric Secretion. B. Purjesz, Jun.—p. 385.
Diagnosis in Ulcer Perforation. Van Amstel.—p. 392.

Neutral Red Elimination in Gastric Function Test.—Glaessner and Wittgenstein observed the dye elimination by the gastric juice in 155 fasting patients after intramuscular injection of 5 c.c. of a 1 per cent. aqueous solution of neutral red. In general, the elimination of the dye was parallel to the secretion of hydrochloric acid, but afforded a finer functional reaction. The pepsin secretion was not parallel. In affections with hypersecretion, accelerated elimination of the dye took place, often after only five minutes; with hyposecretion, retarded elimination; with achylia, no elimination.

Chromoscopic Gastric Function Test.—Luria and Mikrin applied the neutral red test in eighty-two patients with various affections of the stomach. After the Ehrmann alcohol test breakfast, injection was made in the thigh of 2 to 4 c.c. of a 1 per cent. aqueous solution of neutral red. After a time, varying in the different cases, the stomach contents began to be stained. Neutral red, introduced parenterally, is eliminated only by the stomach glands; it is not excreted by the saliva, and exerts no harmful influence. Chromoscopy of the stomach affords opportunities for testing the secretory functions of the stomach independent of its motility.

Influence of Fat on Stomach Secretion.—After forty-five tests in twenty persons on the action of milk and butter, by the fractional methods of gastric analysis, Kalk advises avoidance of vegetable oil, margarine and rancid fat in the diet, and in the treatment of hyperacidity and hypersecretion, oil only in the Cohnheim oil course, abundant use of butter only after individual tests of the stomach reaction to butter, and less milk and more carbohydrates, especially sugar. However, in treatment after stomach resection, milk retains its leading position.

Bitters and the Gastric Secretion.—Purjesz' investigations indicate that bitters are without effect in anacid states. In cases of diminished secretion, bitters may be prescribed if the patient likes them; they may be useful through suggestion. They are useless also in subacidity with much mucus.

Deutsche medizinische Wochenschrift, Berlin

51: 465-506 (March 20) 1925

Dermographism. Goldscheider and H. Hahn.—p. 465. Cont'n.
Bone-Marrow and Leukocytosis. V. Schilling.—p. 467. Cont'n.
*Serologic Determination of Sex of Fetus. A. Schmidt-Ott.—p. 469.
Gonorrheal Rhinitis in the New-Born. W. Framm.—p. 472.
*Duration of Diazo Reaction in Tuberculosis. W. Schnippenkötter.—p. 476.
Technic of Venepuncture and Injection. O. Fischer.—p. 478.
Apparatus for Cleaning Blood Pipets. P. Travers.—p. 479.
Movable Disc of Microscope. F. K. Reinsch.—p. 480.
Soap Treatment of Tuberculosis. Mosberg.—p. 480.
Innervation of Internal Organs. F. Glaser.—p. 481. Conc'n.
English Bill on Proprietary Remedies. E. Rost.—p. 483.
*Alleged Nicotin-Free Products. L. Frank.—p. 484.
War Disabilities and Pensions. P. Weil.—p. 484.
Inconveniences of Free Treatment of Colleagues. J. Schwalbe.—p. 484.
Physician as Witness in Civil Suits. E. Holländer.—p. 485.
An Old Treatment of Clubfoot. H. J. Peppink.—p. 486.
*The Kielland Forceps. F. Geppert.—p. 499. Conc'n.

Serologic Determination of Sex of Fetus.—Schmidt-Ott had 90 per cent. correct results in predicting the sex of the fetus, by the Lüttge and Mertz' alcohol modification of the Abderhalden reaction. In one case of bivitelline twins (boy and girl) the mother's serum digested testis tissue, but the serum from the umbilical vein of the new-born girl did not.

Duration of Diazo Reaction in Tuberculosis.—Schnippenkötter regards the diazo reaction in pulmonary tuberculosis as an indicator of a generally bad but not entirely hopeless prognosis. Of his thirty-eight patients, twenty-seven died within a few months after the appearance of the reaction; six are able to work and five have improved.

Alleged Nicotin-Free Products.—Frank found approximately as much nicotin in the alleged "nicotin-free" cigars and cigarets as in the normal products.

Jahrbuch für Kinderheilkunde, Berlin

108: 79-156 (March) 1925

Action of the Thymus on Growth. K. Scheer.—p. 79.
Digestion of Albumin in Infant Stomach. S. Rosenbaum and M. Spiegel.—p. 87.
Albumin and Calcium Content of the Blood. Z. v. Bókay.—p. 93.
*Vaccination Against Smallpox. J. Simkó.—p. 102.
Diffusible Alkali Content of Blood Serum. J. Csapó.—p. 112.
*Enteral Salt Fever. L. Fiegel.—p. 122.

Intracutaneous and Subcutaneous Vaccination Against Smallpox.—Simkó found the reactions most successful with lymph diluted 1 to 50 and 1 to 60; 0.2 c.c. was drawn into a syringe and, with two other needles, 0.1 c.c. was injected intracutaneously in two places in the thigh. The disadvantage of the method is the absence of scars in proof of vaccination. The procedure is recommended only in case of danger of autovaccination from eczema, etc.

Enteral Salt Fever.—After determination of the salt concentration in the blood of nineteen children, beginning with infants in the first three months of life (Bang), 100 gm. of a 3 per cent. salt solution was introduced by the stomach tube. Fever occurred in 63 per cent. of the children, not exclusively in the youngest. Usually, a definite reaction was absent in normally developed children. Comparison of the blood and temperature curves indicated that the salt in the blood did not directly cause the rise in temperature.

Klinische Wochenschrift, Berlin

4: 529-576 (March 19) 1925

*Lymphogranulomatosis. C. Sternberg.—p. 529.
*Metabolism of Cancer Cell. O. Warburg.—p. 534.
*Respiration Without Respiratory Movements. T. Thunberg.—p. 536.
*Endogenous Inanition. A. Bickel.—p. 538.
*Metabolism of Energy in Children. E. Helmreich.—p. 540.
*Lactic Acid in Blood. B. Mendel et al.—p. 542.
*Sedimentation Test in Morphin Addicts. L. Stern-Piper.—p. 548.
Serodiagnosis of Syphilis. H. Sachs and A. Klopstock.—p. 550.
"Encephalitis of Rabbits." J. Schuster.—p. 550.
"Gangrene After Injury of Sciatic Nerve." W. Frei.—p. 550.
*Blood Pressure Reaction in Parathyroprival Dogs. D. Alpern.—p. 551.
*Liver and Insulin Hypoglycemia. L. Villa.—p. 551.
New Groups of Disinfectants. L. Paneth.—p. 552.
Encephalographic Examination of Brain. J. Schuster.—p. 552.
Fracture of the Radius. H. Meyer.—p. 554.
The Reactive (Gamma) Form of Glucose. F. Laquer.—p. 560.

Lymphogranulomatosis.—Sternberg wonders why Hodgkin's name is still associated with lymphogranulomatosis, although Virchow pointed out very early that the seven cases were not adequately described by Hodgkin, and included tuberculosis, cancer and perhaps syphilis. The histologic findings point to a chronic inflammatory affection—not a tumor. Sternberg recalls recent investigations which strengthen his original hypothesis of a peculiar form of tuberculosis.

Metabolism of Cancer Cell.—Warburg with his collaborators investigated the problem of the reaction which furnishes energy to a cancer cell. Cancer tissue uses less oxygen than the liver or kidney. Therefore he looked for the presence of a second reaction which might supply energy. He found it in the splitting of glucose into lactic acid. Cancer cells produce per hour 10-12 per cent. of their own weight of lactic acid. They live approximately like aerobic lactic acid bacilli by fermentation of glucose, and only partly by oxidation. Cancer cells remain transplantable if kept in Ringer's solution for twenty-four hours in an atmosphere of nitrogen, provided that glucose is added to the solution. A large proportion of the oxygen is not used in the organism, as Meyerhof found, for direct oxidation of lactic acid. It removes six times more split products than it can oxidize. It furnishes only the energy for resynthesis of sugar from lactic acid. If the velocity of splitting is much greater than the velocity of oxygen intake, the splitting metabolism does not change much when anaerobic conditions are substituted for the aerobic—for instance, in yeast. If the oxygen intake is quicker, the change is marked—for instance in the muscle, or with Pasteur's mucor mucedo, which does not ferment under aerobic conditions. The behavior of cancer cells corresponds to that of yeast: it forms in a nitrogen atmosphere only 20 per cent. more lactic acid than in an oxygen atmosphere. The Flexner-Jobling rat cancer oxidizes only one molecule of sugar for every twelve it splits. The same was found in the epithelium of various human cancers, and in sarcomas, including the Peyton-Rous filtrable chicken sarcoma. Benign tumors stand between the malignant and normal tissues, forming three or four times less lactic acid per molecule of oxygen intake than cancer. Embryonic tissue is also a powerful glycolytic agent under anaerobic conditions, but not in the presence of oxygen. Embryonic cells die without it. Normal tissues have a slight glycolytic metabolism under anaerobic conditions, which indicates the continual substitution of new cells for old ones. Only the retina has a stronger anaerobic glycolytic action, which may be due either to some special mechanism or to a more rapid growth of new cells. The end result of the aerobic metabolism of every other cell—including the embryonal—is an oxidation. In cancer it is a fermentation, resembling that of the aerobic lactic acid bacillus.

Respiration Without Respiratory Movements.—Thunberg describes a mechanical respiration apparatus which he calls the "Barospirator." The subject is enclosed in a chamber, and the air pressure inside is rhythmically varied by means of a pump. This has been found a complete substitute for respiratory movements. The volume of the lungs remains constant but the changes of pressure cause a sufficient exchange of air. He believes that the apparatus has advantages over the Pulmotor, and that it might be of use in respiratory paralysis—for instance, in anterior poliomyelitis, and botulinus poisoning. Curare might be used in adequate doses in tetanus and the respiration could be kept up.

Endogenous Inanition.—Bickel reports on the investigation he made with his collaborators on the metabolism of dogs in avitaminosis. Although the quantitative food intake was high, the resorption good, and the oxygen intake lower, the animals lost progressively in weight. The respiratory quotient was also lower. He found an increased elimination of carbon compounds by the urine, which accounts for the decrease in weight. Because of this wasteful breakdown of sugar the cells of the organism are suffering from inanition, notwithstanding the ample food supply.

Metabolism of Energy in Children.—Helmreich used Krogh's graphic method for determination of oxygen intake in fourteen children before and after raising the legs. The proportional increase of metabolism was 20 per cent. in the smallest children and 100 per cent. in the adolescents. Yet the amount of oxygen used for every kilogram-meter computed was approximately equal for all—a little over 2 c.c. These findings explain the comparatively slight influence of restlessness on the basal metabolism in small children.

Lactic Acid in Blood.—Mendel, Engel and Goldscheider found no change in the lactic acid concentration in the blood of healthy subjects after ingestion of glucose. They conclude from this and from the literature that the resorbed sugar penetrates as such into the cells. This accounts for the fact that the blood sugar in healthy subjects reaches its previous level in two hours. They believe that the disturbance in diabetes consists in the reduced penetration of glucose into the cells.

Sedimentation Test in Morphin Addicts.—Stern-Piper found acceleration of sedimentation as a rule in morphin addicts. The sedimentation test slowly returned to normal in the abstinence period. Some of the eukodal addicts showed an acceleration, others a retardation of sedimentation in the test.

Blood Pressure Reaction in Parathyroprival Dogs.—Alpern studied the blood pressure response to epinephrin in dogs. Intravenous infusion of hydrochloric or acetic acid or of normal sodium hydroxid did not influence the reaction. The chlorids of calcium, potassium, magnesium, and especially of sodium lowered the response. Dibasic sodium phosphate prolonged it. In parathyroprival dogs the epinephrin reaction was weak or absent only when the calcium concentration of the blood was lower and the alkali reserve higher. Hydrochloric acid and calcium chlorid increased the reaction in these dogs. The sodium phosphate did not influence it.

Liver and Insulin Hypoglycemia.—Villa found after insulin injections a more pronounced hypoglycemia in the femoral or cava vein than in the hepatic veins. In the grave hypo-

glycemia crisis the hepatic veins contained rather less sugar than the cava. Injection of epinephrin—especially into the portal vein—caused an almost immediate rise in glycemia. Injection of insulin into the portal vein is better tolerated than injection into the peripheral veins. He explains the hypoglycemia as the result of an inhibition of depolymerization of glycogen. Hypoglycemic animals tolerated excellently otherwise lethal doses of epinephrin.

Medizinische Klinik, Berlin

21: 425-458 (March 20) 1925

*Treatment of Abortion. O. v. Franqué.—p. 425.
*Treatment of Sepsis. H. Adler and E. Singer.—p. 429.
Prognosis in Pulmonary Tuberculosis. A. Kirch.—p. 434.
Protein Therapy in Pediatrics. A. Zanker.—p. 436.
Etiology of Measles. A. Menzer.—p. 438. Cont'd.
*Statistics of Pneumothorax Treatment. R. Mohr.—p. 440.
Gaucher's Disease. L. Pick.—p. 441. Cont'n.
Psychotherapy. H. Fendel.—p. 445. Cont'n.
Survey on Hygiene. H. Ziemann.—p. 447.

Treatment of Abortion.—Franqué agrees with Winter's advice that practitioners should treat infected abortion expectantly. The uterus may be evacuated four or five days after defervescence, unless the fever continues for more than five days. A still better rule for the practitioner is to refer every patient with infected abortion to the hospital. The uncomplicated abortion up to the ninth week of pregnancy may be curetted without great danger, if the cervical canal is sufficiently dilated (lumen 15-20 mm. diameter), and if a broad, blunt curet is used. Beginning from the third month, only digital evacuation is allowable. Curettement is dangerous even after the manual evacuation, and it may be, besides, too thorough: If it removes the superficial parts of the muscular layer containing the fundi of the glands, the endometrium cannot regenerate, and atresia of the uterus results.

Treatment of Sepsis.—Adler and Singer studied the phenomena of infection with various germs. The injected germs disappear rapidly from the blood, but reappear in the blood after a few hours in the susceptible animals—not in the immune. Yet the germs may be found in the organs of both the resistant and the diseased animals. They are taken up in the tissues exclusively by the histocytes—in the exudates only by the polymorphonuclears. They find that humoral antibodies play an insignificant rôle in the fight of the organism against germs. Blocking of the reticulo-endothelial apparatus by injection of India ink is followed by grave infection even in immunized animals. Infection injures the reticulo-endothelial system. Congo red, which is usually taken up by these cells, disappears in infections slowly from the blood. Specific serum treatment—with the exception of antitoxins—is of no use. The same applies to disinfectants. Vaccine treatment has doubtful value, the same as the colloidal metals. The slight success in some instances may be due to a stimulation of the reticulo-endothelial apparatus, following the blockage.

Statistics of Pneumothorax Treatment.—Mohr reports recovery of earning capacity in almost 40 per cent. of his tuberculous patients treated with pneumothorax in 1918-1921. About an equal number died.

Monatsschrift für Geb. und Gynäkologie, Berlin

68: 283-406 (March) 1925

Intra-Uterine Resorption of Fetus. J. Umbach.—p. 283.
Imaginary Pregnancy. H. Doerfler.—p. 290.
Obstetric Statistics 1912 to 1920. E. Blumenfeld.—p. 302.
"Intra-Uterine Respiratory Movements of Fetus." W. Walz.—p. 309.
*Full Term Extra-Uterine Pregnancy. H. Dehler.—p. 314.
*Simple Jaundice of the New-Born. F. C. Hilgenberg.—p. 326.
The Smooth Musculature and Origin of Pain. F. Siegert.—p. 331.
Pain in Gynecology. A. Landeker.—p. 345.

Full Term Extra-Uterine Pregnancy with Living Child.—Dehler reports a case with a healthy child and complete recovery of the mother. The infant, however, died suddenly at 4 months from pneumonia. His patient had complained of severe pains during much of the pregnancy but the ectopic site was not recognized. In the literature 240 cases have been established of extra-uterine pregnancy with viable child delivered at term by laparotomy, with a total maternal mortality of 34.7 per cent. from 1813 to 1907, and of 16.7 per cent. in the sixty-one cases from 1907 to 1923.

Simple Jaundice of the New-Born.—Hilgenberg observed icterus neonatorum in 68 per cent. of 564 living infants. Except for loss of weight, it did not seem to do harm. Only one of these jaundiced infants died.

Monatsschrift für Kinderheilkunde, Leipzig

29: 289-668 (Jan.-Feb.) 1925. Congress Report. Partial Index

Biology and Immunology of Tuberculosis. Bessau.—p. 289.
Pathologic Anatomy of Tuberculosis in Children. W. Koch.—p. 303.
Tuberculin Reaction. E. Moro.—p. 324.
Nonspecific Factors in Skin Allergy in Tuberculosis. P. György.—p. 331.
Conditions in Regard to Tuberculosis in Small City. E. Aschenheim.—p. 335.
Comparison of Tuberculin Tests. H. Czickeli.—p. 342.
Sensitization to Tuberculin with Killed Tubercle Bacilli. H. Langer.—p. 346.
*Skin Tests of Hypersensitiveness. Von Gröer and Progulski.—p. 353.
The Negative Phase with Tuberculin. Ossoinig.—p. 357.
Insulin Treatment of Diabetes in Children. R. Wagner.—p. 369.
Diabetes Without Glycosuria in Girl Aged 3. Von Gröer et al.—p. 374.
*Hydration of Animal Tissues. F. Thoenes.—p. 378.
Forced Feeding for Children. Benjamin.—p. 384.
Metabolism in Children During Fever. Birk.—p. 391.
*Tuberculosis in Children from Clinical Standpoint. Engel.—p. 393.
Roentgen Study of Thorax in Tuberculous Children. Wimberger.—p. 409. Idem: Abdomen. Rupprecht.—p. 432.
Danger of Droplets Infection from Coughing in Tuberculosis. Jellenigg and Siegl.—p. 443.
Open Tuberculosis in Children. J. Duken.—p. 448.
Blood Findings in Tuberculous Children. J. Duzár.—p. 452.
Ion Factor in Sedimentation of Erythrocytes. Stern.—p. 464.
Sedimentation Test in Tuberculous Children. Pflüger.—p. 469.
Myxedema. E. Nobel.—p. 474.
Dysergia in Avitaminosis. H. Abels.—p. 484.
Diagnosis of Avitaminosis. B. Leichtentritt.—p. 490.
*Effect of Dystrophia on the Organs. Aron et al.—p. 496.
Vitamin Content of Milk. L. F. Meyer and E. Nassau.—p. 505.
So-Called Normal Agglutinins. P. Widowitz.—p. 509.
Transmission of Herpes Zoster to Man; Its Relation to Chickenpox. K. Kundratitz.—p. 516.
*Etiology of Scarlet Fever. S. Meyer.—p. 524.
*Diphtheria Bacilli Carriers. M. Haidvogl and F. Wiltschke.—p. 531.
*Diphtheria Infection and Disease. F. Wiltschke and H. Simchen.—p. 535.
Examination of Infants Suspended by Axillae. Camerer.—p. 541.
Pyuria in Infants. W. Lasch and Presting.—p. 544.
Anaerobes in Intestine in Infants. H. Kleinschmidt.—p. 550.
Motor Reflexes in Second Year of Life. A. Landau.—p. 555.
Ammonia Formation in Infants. M. Landsberger.—p. 559.
Intestine Findings in Infants' Diarrhea. Adam and Froboese.—p. 562.
Spasmophilia as a Diathesis. W. Usener.—p. 578.
Goat's Milk Anemia. E. Stettner.—p. 587.
Influence of Nutrition and Environment on Growing Animals. Degkwitz et al.—p. 592.
Influence of Institutional Environment on Children. Von Pfaundler et al.—p. 611.
Rickets in Congenital Thyroid Deficiency. F. Siegert.—p. 627.
Inflatable Bag to Prevent Rumination. F. Siegert.—p. 631.
Development of Drawing by Children. T. Gött.—p. 633.
Eczemas in Children. P. Tachau.—p. 638.
Beginning of Biliary Affections in Childhood. H. Abels.—p. 647.
Congenital Myeloid Leukemia in an Infant. E. Stransky.—p. 654.
Amaurotic Idiocy. E. Thomas.—p. 660.
Lordotic Dystonia. J. Fritz.—p. 665.

Allergy and Skin Hypersensitiveness.—Von Gröer and Progulski's tests showed that a positive skin reaction is not necessarily accompanied by a digestive hypersensitiveness, and vice versa. Skin tests therefore are no criterion for digestive hypersusceptibility.

Bound Water in the Tissues.—Thoenes states that as the water combined with organic matter does not freeze at minus 18 C., he utilized this in study of the water content of the muscles in six fatal cases of exsiccation.

Clinical Study of Tuberculosis in Children.—Engel discusses in particular the effect of occult tuberculosis on the manifestations of other diseases.

The Organs in Chronic Malnutrition.—In thirty-five infant cadavers, the thymus and ovaries displayed the gravest evidences of injury from the dystrophia, the thyroid, the least.

Etiology of Scarlet Fever.—The Italian investigators found what they regard as the specific diplococci in cultures from measles and polyarthritis cases as well as in scarlet fever, with like changes in the culture mediums, and, in a case of hydrophobia, in the brain and saliva-urine-cerebrospinal fluid cultures. Meyer observed similar micro-organisms and phenomena in mediums inoculated with the blood of healthy

persons; even noninoculated controls presented similar findings. The diplococci were found in the smears from the liver and spleen of a control rabbit which died thirty hours after injection with not inoculated culture medium. Serums from scarlet fever patients in all stages were combined with an antigen from scarlet fever scales and an antigen from scarlet fever cultures, with as many positive as negative results. Intracutaneous injections of scarlet fever vaccine in fifty-three persons, with and without a recent or old scarlet fever history, gave constantly positive reactions. She thus has confirmed the statements of the Italians as to cultures, serologically and in animal experiments, but the identical findings in healthy controls and sterile culture mediums cast grave doubt on their conclusions.

Diphtheria Bacilli Carriers.—Without intercourse with diphtheria patients, about 20 per cent. of the healthy infants and young children and 10 per cent. of the older children in Graz were diphtheria carriers. Of the children frequently exposed, about 6 per cent. contracted the disease, mostly debilitated children. The bacilli findings showed seasonal fluctuations. About 66 per cent. of the adults exposed to infection proved to be diphtheria bacilli carriers.

Infection and Disease in Diphtheria.—Wiltschke and Simchen report that experimental inoculation of diphtheria bacilli on the tonsils of four children failed to produce the disease, but resulted in antitoxin and agglutinin formation.

Münchener medizinische Wochenschrift, Munich

72: 461-502 (March 20) 1925

*The Trachoma Question. A. Peters.—p. 461.
*Cosmetic Considerations in Surgery. H. Flörcken.—p. 463.
*Examination of Abdominal Cavity. M. M. Gubergritz.—p. 465.
*Hemostasis in Mouth. H. Seidel.—p. 467.
*Acetylene Anesthesia. K. Hurler.—p. 468.
Tolerability of Various Bismuth Preparations in Neurosyphilis. A. Dannhauser.—p. 471.
*Hypoglycemic Reaction. F. Fischler and F. Ottensooser.—p. 471.
*Oxyuriasis in School Children. A. Japha.—p. 473.
*Heredity in Goiter. T. Fürst.—p. 474.
Internal Examination by Midwife. L. Feldmann.—p. 475.
Portable Pneumothorax Apparatus. Zobel.—p. 477.
*The Biphoscope. A. Kühn.—p. 479.
Obstetrics from Medicolegal Standpoint. Hofmeier.—p. 479.
Centenary of Bilharz. E. Ebstein.—p. 480.
Management of Postpartum Period. G. Conrad.—p. 481.
The Psychiatry Expert in Court. W. Weygandt.—p. 483.

The Trachoma Question.—Peters does not regard the inclusions described by Prowazek and Halberstädter as the cause of trachoma. As long as the agent is not found, other possibilities have to be taken into consideration. He has always maintained that a predisposition is essential. The population of Mecklenburg and of the surroundings of Bonn seem to be immune. Koch-Weeks bacilli seem to be regularly associated with trachoma. They should not be regarded as harmless in countries with a population predisposed to trachoma.

Cosmetic Considerations in Surgery.—Flörcken recommends in tracheotomy a transverse incision corresponding to the papillary lines of the skin, instead of the longitudinal, which leaves an ugly scar. An abscess of the breast should be opened transversely if below the nipple, and with a radial incision if above it. Kocher's incision in inguinal hernia is not physiologic. He recommends an almost transverse incision at the height of the external ring, and uses the same incision in femoral hernia. It frequently happens that a new incision is made at a second operation (for instance, for appendicitis), instead of excision of the old scar.

Examination of Abdominal Cavity.—Gubergritz found palpation of abdominal organs easier if the patient was reclining on his left side. He confirms Rosenstein's observation on the tender point between the median line and the iliac spine—due probably to an adhesion—in chronic appendicitis. The liver is quite sensitive in the above position in cholelithiasis. The abdomen of these patients was not tender when they were lying on the back.

Hemostasis in Mouth.—In persistent bleeding after the extraction of a tooth, Seidel cuts a boiled cork stopper to fit between the two neighboring teeth, and connects it by a thread with another piece of cork which he leaves outside of the mouth, to prevent an eventual swallowing.

Acetylene Anesthesia.—Hurler reports on 400 cases of acetylene anesthesia with one explosion and one death in decompensated stenosis of the pulmonary artery. The advantages of the method combined with morphin-scopolamin are great: rapid and easy anesthesia and awakening, rarity of vomiting, and absence of postoperative pneumonia. Contracture of the muscles of the jaw, with paralysis of the tongue, occurred frequently, and nearly suffocated one patient. The insufficient relaxation of the abdominal muscles is another disadvantage.

Hypoglycemic Reaction Without Insulin.—Fischler and Ottensooser produced all the symptoms of insulin intoxication in rabbits by lowering the blood sugar by fasting, phlorhizin and epinephrin. The condition was described by Fischler in 1913 under the name of glycoprival intoxication. Infusions of glucose restore the animal immediately. The only difference is that it takes longer than with insulin, and that a general weakness precedes the convulsions, because other reserves are exhausted first. They observed urobilinuria in the glycoprival intoxication even when the common bile duct was ligated. This establishes a purely hepatogenous type of urobilinuria.

Oxyuriasis in School Children.—Japha found oxyuriasis in 73.3 per cent. of 300 boys from elementary schools and in 66 per cent. of children from elementary and high schools.

Heredity in Goiter.—Fürst found that the predisposition to goiter appears in the child which inherits the blood group of the affected parent. The children belonging to the blood group of the healthy parent are free from goiter. This rule was apparent in thirty-six out of thirty-nine cases.

The Biphoscope.—Kühn has devised a double stethoscope for direct comparison of corresponding parts of the lungs.

Wiener klinische Wochenschrift, Vienna

38: 319-346 (March 19) 1925

*The Gastro-Enterostomy Disease and Jejunal Ulcer. K. Blond.—p. 319.
*Ulcer-Cancer of Stomach. H. Finsterer.—p. 321. Conc'n.
*Anxiety and Eurhythmia. L. Braun.—p. 325.
*Iodin Treatment of Myxedema. M. Engländer.—p. 327.
*Diathermy of Pituitary in Ovarian Insufficiency. Szenes.—p. 330.
*Toxic Action of Concentrated Sugar Solutions. W. Hausmann.—p. 332.
Light Filter for Photomicrography. E. Preissecker.—p. 332.
*"Chronic Infectious Anemia." Fiebiger.—p. 334.
Gastro-Intestinal Function Before and After Operation. J. Schnitzler.—p. 334.
The Tongue in Diagnosis and Prognosis. J. Wiesel. Supplement.—pp. 1-11.

The Gastro-Enterostomy Disease and Jejunal Ulcer.—Blond regards Pribram's "gastro-enterostomy disease" as a new term for the chronic vicious circle. His observations during laparotomies and experiments convinced him four years ago that the condition is due to an intermittent incarceration of the jejunal loop in a spastic hour-glass stomach. The spasm is due to irritation set up by the wound. Atropin has a good influence on the condition. The spasm is also the main cause of postoperative jejunal ulcer. Its roentgenologic symptoms are the same as those of the chronic vicious circle—the delayed or repeatedly interrupted function of the new opening. Retrograde invagination of the jejunum into the stomach may be another cause for the ulcer. It is probably much more frequent than the thirteen cases reported since 1917 would indicate: In the first seven years after the first report on jejunal ulcer, there were also only twelve cases published.

Ulcer-Cancer of Stomach and Indications.—Contrary to Aschoff, Finsterer finds that cancer develops in gastric ulcers quite frequently. Among the 175 cancers resected by him during the last ten years, 26.6 per cent. had developed on the basis of ulcers, and—which is still more important—among the 145 patients in whom he resected a supposedly pure gastric ulcer, 21.4 per cent. had cancer. It is impossible to make the diagnosis during operation without the histologic findings. A few instructive cases, in which callous ulcers of long standing developed into cancers, are given. He criticizes the statistics which seem to demonstrate the rarity of development of cancer from gastric ulcer. The observation

is correct only in ulcers of the duodenum: he saw no instance of cancer in his 439 resected duodenal ulcers. He emphasizes the importance of his statistics for the indications of resection. Every hard ulcer should be resected before cancer develops. Once it penetrates into the pancreas, the patient is hardly to be considered operable.

Anxiety and Eurhythmia.—Braun regards anxiety as a specific sensation of the heart. It is impossible to think of one's own heart without having a peculiar feeling of anxiety about it. He agrees with Flemming that every anxiety is a slight angina pectoris. The psychic changes in heart disease are disturbances of the rhythm of life.

Iodin Treatment of Myxedema.—Engländer believes that iodin is the active principle of the thyroid. He used it—instead of thyroid extracts—successfully in the treatment of hypothyroidism. He begins by giving twice a day 20 drops of a solution of 0.01 gm. of potassium iodid in 100 c.c. of water. After a careful control of the patient—especially of the rising temperature, which he estimates highly as an index—he increases it to three daily doses, and later doubles the strength of the solution.

Diathermy of the Pituitary in Ovarian Insufficiency.—Szenes used diathermy of the head in patients with climacteric disturbances. The majority of these women were influenced better than with roentgen rays.

Toxic Action of Concentrated Sugar Solutions.—Hausmann injected 1 c.c. of a 50 per cent. solution of saccharose or other sugars subcutaneously in mice. The temperature of the animals decreased rapidly (14 C. in two hours), and a lethal coma—sometimes with spasms—set in. He attributes the symptoms to a loss of water ("osmotic death").

"Chronic Infectious Anemia."—Fiebiger comments on Edelmann's paper by admitting a resemblance with piroplasms (Babesia) only in the small forms containing no pigment. The larger forms resemble the quartan parasite.

Zeitschrift für urologische Chirurgie, Berlin

17: 119-250 (March 7) 1925

"Functional" Muscle Respecting Lumbar Incision to Expose Kidney. P. Rosenstein.—p. 119.
Bladder and Kidney Calculi in Dalmatia. J. Racic.—p. 127.
Renal Echinococcosis in Dalmatia. J. Racic.—p. 163.
*Profuse Renal Hemorrhages. V. Blum.—p. 169.
Double Ureter. R. M. Fronstein and M. A. Saigrajeff.—p. 187.
Polypous Fibroids in Kidney Pelvis. B. Laqueur.—p. 205.
Gonorrheal Epididymitis. W. P. Iljinsky.—p. 213.
*Hypertrophy of the Prostate. G. v. Illyés.—p. 229.

Diagnosis and Treatment of Profuse Renal Hemorrhages.—Blum says it is the fundamental rule in diagnostic interpretation that every renal bleeding is due to organic disease in the kidney or kidney pelvis, which should not be undervalued. Detailed report is given of three cases with puzzling diagnosis and unusual operative findings. He considers the assumption of an essential or hemophilic hematuria as no longer valid. He lists nine groups of organic conditions liable to entail profuse renal hemorrhage. He found a hypernephroma responsible in sixteen cases. Decapsulation is recommended in unilateral or bilateral renal bleeding with a probable diagnosis of nephritic hemorrhage, after failure of all methods of internal treatment of the hemorrhage.

Treatment of Hypertrophy of the Prostate.—Illyés bases his statements on 470 operative cases, of which thirty-nine resulted fatally, in fourteen instances from bronchopneumonia. The last 330 operations were made under epidural anesthesia. Hypertrophy of the prostate is due to the tumor-like degeneration of submucous glands within the sphincter and above the verumontanum. A recurrence may follow from proliferation of adenomatous nodules left at the operation. He believes the indications for surgical intervention should be broadened. In certain anatomic lesions and decline of the kidney function, operative treatment prevents further destruction of the kidney.

Casopis lekaru ceskych, Prague

64: 441-480 (March 21) 1925

*Etiology and Treatment of Hiccup. A. Jirásek.—p. 441.
Insulin Treatment of Coma. J. Cervenka.—p. 447. Cont'd.
*Diogenism. V. Vondrácek.—p. 451.
*Treatment of Tuberculosis. F. Lédl.—p. 464.

Etiology and Treatment of Hiccup.—Jirásek points out that contractions of accessory respiratory muscles—not only of the diaphragm—may produce hiccup. The main cause of postoperative hiccup is the traction on or other irritation of the organs innervated by the sympathetic system, especially the stomach. Therefore he advises to interrupt the reflex by anesthetizing the lower part of the cervical sympathetic nerve. This proved successful in one patient. Anesthesia of the splanchnic nerve might also be advisable, if the celiac ganglion is irritated.

Diogenism.—Vondrácek uses this term to designate an effort to get rid of the refinements of civilization and to lead a life closer to nature. It is a reaction to the painful process of civilization, and it occurs partly sporadically, partly *en masse*. He publishes the history of three patients, and tries to diagnose Bleuler as a fourth instance of the affection—especially in his rejection of therapy in typhoid and cancer and his advice against cleaning the teeth except with the tongue. Diogenism is the return to nature, with overestimation of the somatic function and underestimation of intellect, as exemplified by the scout movement, camping and the whole present trend of physical training of youth. Certain revolutions—the French, the Russian—displayed elements of diogenism. Its first signs in literature are idyls: "The shepherd and shepherdess indicate the impending collapse of culture."

Vaccine Treatment of Laryngeal Tuberculosis.—Lédl was struck by the tendency of rhinoscleroma to produce solid scar tissue, which is the reverse of a cheesy tuberculous process. He never found a confirmed case of tuberculosis in a rhinoscleroma patient. Therefore he treats patients with tuberculosis of the larynx with subcutaneous injections of from 0.5 billion to 10 billions of Frisch's bacilli, and reports fair success.

Acta Path. et Microbiol. Scandinavica, Copenhagen

1: 1-103, 1924

*Wassermann Substance and Antibodies. J. Forssman.—p. 5.
*Heredity of Hypersensitive Conditions. A. de Besche.—p. 23.
Histologic Study of Myeloid Leukemia. S. Petri.—p. 37.
Fistula of Anus. F. Henschen.—p. 56.
Marx-Ehrnrooth Agglutination Test. F. Jervell.—p. 65.
Antibody Production by Antigens Prepared in Various Ways. T. Skoog.—p. 72.

The "Acta."—This new journal, the "mouth-piece of the pathologic societies of the four Scandinavian countries," will publish articles only in English, French or German. This is the principle followed in the entire group of Scandinavian *Acta*, of which there are now eight. All are reviewed in this department.

Chemical Study of Wassermann Substance and Antibodies. Forssman found that formaldehyd in small doses destroys the substance that gives the Wassermann and the Sachs-Georgi reactions. With somewhat larger doses, the serums and globulin solutions become anticomplementary. Formaldehyd has the same effect on all antibodies, except antitoxins, as on the Wassermann substance. Addition of an amino-acid with the formaldehyd retards the destruction of the antibodies. Colloid phenomena seem also to interfere. The formaldehyd-antibody reaction is not reversible.

Heredity of Hypersensitive Conditions.—De Besche reports on his investigation on asthma and related conditions in four generations of a family, but his material is too small to justify definite conclusions.

1: 105-200, 1924

Variation of Bacteria. H. Bergstrand.—p. 105.
*Anthrax from Shaving Brush. O. Thomsen and V. Jensen.—p. 114.
Bisexuality of Ovary, and Tumors of Suprarenal Cortex. T. Kemp.—p. 132.
Serologic Proof of Congenital Syphilis with Extract of Fetal Organs. O. Thomsen.—p. 139.
Life of Transfused Erythrocytes. F. Jervell.—p. 155.

Anthrax from Shaving Brush.—Practically this same article was summarized in THE JOURNAL, Dec. 20, 1924, p. 2056.